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# BULLETIN

## OF THE

# NORTH CAROLINA BOARD OF HEALTH

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*Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.*

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GEO. G. THOMAS, M. D., <i>Pres.</i> , Wilmington.	T. E. ANDERSON, M. D.---Statesville.
S. WESTRAY BATTLE, M. D.---Asheville.	J. HOWELL WAY, M. D.---Waynesville.
HENRY W. LEWIS, M. D.----Jackson.	W. O. SPENCER, M. D.----Winston-Salem.
W. P. IVEY, M. D. -----Lenoir.	J. L. LUDLOW, C. E. ----Winston-Salem.

RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

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VOL. XXI.

APRIL, 1906.

No. 1.

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### ANNUAL MEETING OF THE BOARD.

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The annual meeting of the State Board of Health will be held on the evening of Tuesday, May 29th, at Charlotte, both law and custom requiring this body to meet at the same time and place as the State Medical Society, from which it originated. On Wednesday at 12 M. the conjoint session of the Board with the Society will be held. This, so far as we know, is a unique feature—this formal assembling together. It is a time when the views of the profession generally can be obtained, and therefore it is extremely desirable that as many as possible, especially county superintendents of health and municipal health officers, should be present that we may confer together.

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### THE RELATION OF THE GENERAL PRACTITIONER TO THE BOARD OF HEALTH.

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BY RICHARD H. LEWIS, M. D., SECRETARY STATE BOARD OF HEALTH,  
RALEIGH.

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The management of the *Carolina Medical Journal* has requested the writer to prepare for their April issue a short paper on the subject set forth in the title above. Looking at it from the standpoint of the public health, there is no subject so important as this relationship, for in the last analysis success in the cause of preventive medi-

cine depends, more than upon anything else, upon the active interest and co-operation of the general practitioner.

The relationship is of two kinds—legal and moral or professional. Under the law the State Board of Health is composed of nine members, of whom the State Medical Society, the organization representing the whole medical profession, elects four, which gives it a potent though not controlling influence. The other five members, appointed by the Governor, with the exception of the sanitary engineer, have always been physicians. Each county has an auxiliary board of health, composed of all the resident registered physicians, which is subject to the call of the Chairman of the Board of County Commissioners should conditions become so grave as to render consultation with them desirable. The county sanitary committee, which is the unit in the sanitary organization of the State, and which, when not superseded for the corporation by the municipal board of health, is the real working body in sanitary effort, is composed of the Board of County Commissioners and two physicians. The executive officer of this body—the county superintendent of health—must be a physician. It is made his duty to see that the proper precautions, in the way of quarantine and disinfection, are taken to prevent the spread of infectious diseases. In order to enable him to perform this duty, practitioners are required, under penalty of a fine of not less than ten nor more than twenty-five dollars, to notify him, within twenty-four hours, of the occurrence in their practice of such infectious diseases. In incorporated cities or towns the notice is to be given to the local health officer or to the mayor. Having received such notice, these officials are required to see that proper precautions, in the way of quarantine and disinfection, are taken, and to notify the school authorities, that they may assist in keeping the disease out of the schools.

From the above statement it appears that the physician is practically not in relation so much with the State Board of Health, whose powers are only advisory, as with his county or city board; and so by "Board of Health" in the title of this paper is meant the entire sanitary organization of the State as a whole.

It is manifest that the bare performance by every physician of his duty as specifically laid down in the law, which the Supreme Court has declared to be a "well-considered" law, would mean great things for health preservation. But no law, no matter how good in itself, is effective unless it has public opinion behind it. In this case the portion of the body politic whose opinion and support would be the most effective is the medical profession. And so at last the cause of hygiene depends chiefly for its success upon the attitude towards it of the general medical profession, which brings us to the moral and professional view of the subject.

The relation of the physician to his patient is not an ordinary commercial one that can be measured in dollars and cents, but something



much more intimate and personal. The patient puts himself in the hands of his doctor, entrusts his health and life to him, and any physician who fails to do his full duty by him, or who takes advantage of him in the way of unnecessary charges, is guilty of much more than the breaking of an ordinary commercial contract—he is guilty of a breach of trust. And in the case of the regularly employed family physician it is expected that he have an eye to the general welfare of the family from the medical point of view. He is the general medical adviser of the family, and it is clearly his duty not only to advise as to the cure of the cases of sickness occurring therein, but to give also such general advice as to sanitary precautions and the abatement of such unsanitary conditions as may be called for to prevent the occurrence of sickness in the well. For instance, a physician having a case of tuberculosis in a family, no matter how faithful he may be in the treatment of the patient, is not living up to the standard of his high calling if he does not give full and explicit instructions to the family as to the proper methods to prevent the communication of the disease to other members of it. All well-informed physicians are of course familiar with the methods, but to assist the medical attendant and to save him trouble the State Board of Health has prepared a pamphlet on the prevention of consumption, and has requested, in a letter sent with a copy to every physician in the State whose address was known, that he apply for copies for distribution in his infected families. Practically every case of tuberculosis is known to some doctor, and he, of all others, is in a position to help the Board in its work by placing its literature with those who need it most. This is exactly a case in point, and clearly illustrates the relation of the physician to the Board of Health. Cordial and active co-operation with the Board in its efforts to protect the people from disease on the part of the general practitioner would be of inestimable benefit to the people.

By this is meant not only the State Board, but also the county and municipal boards. Above all, a hearty support of the local health officer in his work, which is often difficult and disagreeable, is to be desired.

In a word and in conclusion, every member of the medical profession, which, when practised in the right spirit, is indeed a noble profession, is *ipso facto* in a sense a health officer to the families of his *clientele*, and should work in concert with the health officer. *Noblesse oblige.*—*The Carolina Medical Journal*.

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## REVIEW OF DISEASES FOR MARCH, 1906.

## EIGHTY COUNTIES REPORTING.

Ninety-five counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of March the following diseases have been reported from the counties named:

MEASLES.—Alamance: Anson, many; Ashe, 20; Bladen, many; Caldwell, 11; Caswell, several; Catawba, 9; Chatham, 3; Columbus, 2; Cumberland, many; Davidson; Davie; Forsyth, many; Gaston; Gates; Guilford, 66; Henderson, general; Johnston, several; Lincoln, in all parts; Macon, in all parts; Mecklenburg; Montgomery, 100; Onslow; Person, many; Pitt, epidemic; Randolph, 20; Robeson, epidemic; Rowan, many; Rutherford, 3; Sampson, many; Scotland, several; Surry, 12; Union, epidemic; Vance, a few; Wake, 10; Watauga, many; Wayne, 2; Wilson, many; Yancey, a few—39 counties.

WHOOPING-COUGH.—Alamance; Ashe, 60; Burke, a few; Caldwell, 10; Caswell, several; Catawba, 3; Chatham, 10; Cleveland, several; Columbus, 4; Cumberland; Davidson; Davie; Duplin, 10; Durham, epidemic; Forsyth, many; Gates; Guilford, 4; Iredell, 2; Johnston, several; McDowell, 10; Mecklenburg; Montgomery, many; Nash; Perquimans, 50; Person, many; Randolph, 50; Robeson, epidemic; Rowan, many; Rutherford, several; Sampson, many; Transylvania, several; Vance, a few; Wake, 20; Watauga, several; Wilson—35 counties.

SCARLATINA.—Brunswick, 3; Cherokee, 1; Craven, 1; Duplin, 1; Edgecombe, 3; Forsyth, 1; Mecklenburg—7 counties.

DIPHTHERIA.—Cabarrus, 1; Durham, 1; Guilford, 2; Halifax, 3; Henderson, 1; Macon, 3; Mecklenburg; Orange, 1; Pender, 2; Surry, 2; Union, 1; Wake, 1—12 counties.

TYPHOID FEVER.—Caldwell, 7; Caswell, 5; Chatham, 1; Columbus, 5; Cumberland; Macon, 2; Madison, a few; Martin, 2; Montgomery, 2; New Hanover, 1; Randolph, 2; Rowan, 2; Union, many; Wake, 4; Warren, 1; Wilkes, 2; Yancey, a few—17 counties.

MALARIAL FEVER.—Currituck, a few; Halifax.

INFLUENZA.—Alamance; Brunswick; Caswell; Chatham; Cumberland; Currituck; Forsyth; Gaston; Sampson; Swain; Wilkes; Yadkin—12 counties.

PNEUMONIA.—Alamance; Ashe, 40; Bladen, 1; Burke, 6; Cabarrus, 6; Caswell; Catawba, 12; Chatham, 1; Cherokee, 16; Davidson, 1; Davie, a few; Duplin, 4; Forsyth; Gaston; Henderson, a few; Hertford, 10; Hyde, 3; Lincoln, in all parts; Martin, a few; Mecklenburg; Mitchell; New Hanover; Orange, in all parts; Perquimans, 10; Person, a few; Randolph, in all parts; Robeson, several; Rowan; Scotland; Union, many; Wake, 50; Warren, a few; Wayne, 1; Yadkin, several; Yancey, several—35 counties.

MENINGITIS, CEREBRO-SPINAL.—Ashe, 2; Brunswick, 1; Catawba, 1; Chatham, 1; Madison, 1—5 counties.

MUMPS.—Gaston; Gates; Onslow.

TONSILLITIS.—Currituck.

VARICELLA.—Alamance; Rutherford.

SMALLPOX.—Anson, a few; Bertie, a few; Bladen, 1; Brunswick, 3; Columbus, 18; Craven, 1; Cumberland, 18; Duplin, 4; Franklin, 1; Gates, a great many; Granville, 1; Guilford, 3; Halifax, 20; Hertford, 16; Hyde, 50; Macon, 3; Mecklenburg, 9; Nash, 17; New Hanover, 2; Pasquotank, 13; Pender, many; Perquimans, a few; Pitt, 1; Polk, 2; Robeson, 8; Sampson, 1; Warren, 1; Washington, 2; Wayne, 3—29 counties.

CHOLERA, IN CHICKENS.—Davie.

CHOLERA, IN HOGS.—Jackson, Union.

DISTEMPER, IN HORSES.—Burke, Madison, Watauga.

PINK-EYE, IN HORSES.—Cherokee.

RABIES, IN DOGS.—Hertford, 2.

No diseases reported from Buncombe, Carteret, Dare and Haywood.

No reports received from Alexander, Alleghany, Camden, Chowan, Clay, Graham, Greene, Harnett, Jones, Lenoir, Moore, Pamlico, Richmond, Rockingham and Stanly.

## SUMMARY OF MORTUARY REPORTS FOR MARCH, 1906.

	<i>White.</i>	<i>Col'd.</i>	<i>Total.</i>
Aggregate population .....	90,900	60,350	151,250
Aggregate deaths .....	83	120	203
Representing annual death-rate per 1,000...	10.9	23.9	16.1
<i>Causes of Death.</i>			
Whooping-cough .....	1	1	2
Measles .....	1	2	3
Pneumonia .....	17	19	36
Consumption .....	13	16	29
Brain diseases .....	6	12	18
Heart diseases .....	8	10	18
Neurotic diseases .....	1	4	5
Diarrhoeal diseases .....	1	6	7
All other diseases.....	34	47	81
Accident .....	0	3	3
Suicide .....	1	0	1
	<hr/>	<hr/>	<hr/>
	83	120	203
Deaths under five years.....	21	33	54
Still-born .....	5	10	15

## Mortuary Report for March, 1906.

TOWNS AND REPORTERS.	POPULA- TION.		TEM- PORARY ANNUAL DEATH- RATE PER 1,000.																TOTAL By Races, By Towns, Deaths under five years, Still-born.						
	RACES.	By Races.	Total.	By Races.	Total.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhoeal Diseases.	All Other Diseases.	Accident. Suicide.	Violence.	By Races.	By Towns.	Deaths under five years.	Still-born.	
<b>Charlotte</b> .....	W.	12,000	20,000	14.0	19.2	.....	.....	.....	.....	.....	1	3	2	.....	.....	.....	.....	.....	.....	.....	14	32	6	2	
Dr. F. O. Hawley.	C.	8,000		30.7		.....	.....	.....	.....	.....	.....	.....	2	6	2	.....	.....	.....	.....	.....	.....	6	2	18	32
<b>Durham</b> .....	W.	12,000	18,000	7.0	15.4	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	3	.....	.....	.....	7	24	2	.....
Dr. T. A. Mann.	C.	6,000		34.0		.....	.....	.....	.....	.....	1	.....	1	3	.....	.....	.....	.....	3	7	.....	.....	.....	17	24
<b>Elizabeth City</b> .....	W.	6,000	10,000	4.0	14.4	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	.....	2	12	.....	.....
Dr. H. D. Walker.	C.	4,000		30.0		.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	.....	1	6	1	.....	.....	10	12
<b>Fayetteville</b> .....	W.	3,500	6,000	6.9	10.0	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dr. A. S. Rose.	C.	2,500		14.4		.....	.....	.....	.....	.....	.....	.....	2	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	3	5
<b>Greensboro</b> .....	W.	10,000	15,000	6.0	11.2	.....	.....	.....	.....	.....	.....	1	1	1	.....	.....	.....	1	.....	.....	5	14	1	.....	
Dr. Edward Harrison.	C.	5,000		21.6		.....	.....	.....	.....	.....	.....	.....	2	1	2	1	.....	.....	.....	3	.....	.....	9	14	1
<b>Henderson</b> .....	W.	2,000	4,200	6.0	17.1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	6	1	.....	
Dr. G. A. Coggeshall.	C.	2,200		27.3		.....	.....	.....	.....	.....	.....	.....	2	1	.....	.....	.....	.....	.....	2	.....	.....	5	6	3
<b>Marion</b> .....	W.	1,500	1,600	0.0	0.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0	0	.....	.....	
Dr. B. F. Ashworth.	C.	100		0.0		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0	0	.....
<b>Oxford</b> .....	W.	1,400	2,800	8.6	21.4	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	1	5	.....	.....	
Dr. S. D. Booth.	C.	1,400		34.3		.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	4	.....	.....
<b>Raleigh</b> .....	W.	9,000	16,000	16.0	15.0	.....	.....	.....	.....	.....	.....	.....	2	1	.....	.....	.....	7	.....	.....	12	20	1	.....	
T. P. Sale, Clerk B. H.	C.	7,000		13.7		.....	.....	.....	.....	.....	.....	.....	1	2	.....	2	1	.....	.....	2	.....	.....	8	20	1
<b>Rocky Mount</b> .....	W.	2,500	4,000	4.8	6.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	2	.....	.....	
Dr. L. C. Covington.	C.	1,500		8.0		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2	.....
<b>Salisbury</b> .....	W.	7,400	11,000	11.3	12.0	.....	.....	.....	.....	.....	.....	.....	1	3	.....	.....	.....	3	.....	.....	7	11	3	.....	
Dr. H. T. Trantham.	C.	3,600		13.3		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	4	.....	.....	4	11	3
<b>Southport</b> .....	W.	900	1,400	26.7	17.1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	2	2	1	.....	
Dr. J. A. Doshier.	C.	500		0.0		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0	.....	.....
<b>Tarboro</b> .....	W.	2,500	3,500	0.0	10.3	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0	3	.....	.....	
Dr. S. N. Harrell.	C.	1,000		36.0		.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	2	.....	.....	3	3	.....
<b>Wadesboro</b> .....	W.	1,200	2,000	20.0	12.0	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	2	2	.....	.....	
Dr. J. H. Bennett.	C.	800		0.0		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0	.....	.....
<b>Washington</b> .....	W.	3,500	6,500	17.1	18.5	.....	.....	.....	.....	.....	.....	.....	1	.....	3	.....	.....	1	.....	.....	5	10	.....	.....	
Dr. John G. Blount.	C.	3,000		20.0		.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	4	.....	.....	5	10	.....
<b>Weldon</b> .....	W.	700	1,450	51.4	41.4	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	1	.....	.....	3	5	1	.....	
J. T. Gooch, Mayor.	C.	750		35.2		.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	.....	2	5	.....
<b>Wilmington</b> .....	W.	11,000	21,000	16.4	22.8	.....	.....	.....	.....	.....	.....	.....	5	.....	3	.....	.....	6	1	.....	15	40	3	1	
Dr. Charles T. Harper.	C.	10,000		30.0		.....	.....	.....	.....	.....	.....	.....	.....	.....	2	3	4	5	2	.....	.....	.....	9	25	40
<b>Wilson</b> .....	W.	3,800	6,800	12.6	17.6	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	1	.....	1	.....	4	10	.....	.....	
Dr. W. S. Anderson.	C.	3,000		24.0		.....	.....	.....	.....	.....	.....	.....	.....	.....	1	1	1	1	1	.....	.....	.....	6	10	.....

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

### County Superintendents of Health.

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Alamance .....	Dr. George W. Long.	Jones.....	Dr. N. G. Shaw.
Alexander .....	Dr. O. L. Hollar.	Lenoir .....	Dr. C. L. Pridgen.
Alleghany .....	Dr. Robt. Thompson.	Lincoln .....	Dr. R. W. Petrie.
Anson .....	Dr. J. H. Bennett.	McDowell .....	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon .....	Dr. W. A. Rogers.
Beaufort .....	Dr. John G. Blount.	Madison .....	Dr. W. J. Weaver.
Bertie .....	Dr. H. V. Dunstan.	Martin.....	Dr. W. E. Warren.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick .....	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe .....	Dr. D. E. Sevier.	Montgomery .....	Dr. J. B. Shamburger.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash.....	Dr. J. P. Battle.
Caldwell.....	Dr. C. L. Wilson.	New Hanover .....	Dr. W. D. McMillan.
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret .....	Dr. F. M. Clarke.	Onslow.....	Dr. Cyrus Thompson.
Caswell .....	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba .....	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. J. H. Taylor.	Pasquotank .....	Dr. J. B. Griggs.
Cherokee.....	Dr. J. A. Abernathy.	Pender.....	Dr. R. J. Williams.
Chowan.....	Dr. T. J. Hoskins.	Perquimans.....	Dr. C. C. Winslow.
Clay .....	Dr. J. M. Sullivan.	Person .....	Dr. J. A. Wise.
Cleveland .....	Dr. B. H. Palmer.	Pitt.....	Dr. Joseph E. Nobles.
Columbus.....	Dr. H. B. Maxwell.	Polk.....	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph .....	Dr. A. M. Bulla.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. L. D. McPhail.
Currituck .....	Dr. H. M. Shaw.	Robeson .....	Dr. H. T. Pope.
Dare .....	Dr. W. B. Fearing.	Rockingham .....	Dr. Sam Ellington.
Davidson .....	Dr. Joel Hill.	Rowan.....	Dr. J. S. Brown.
Davie .....	Dr. M. D. Kimbrough.	Rutherford.....	Dr. E. B. Harris.
Duplin .....	Dr. A. J. Jones.	Sampson .....	Dr. J. O. Matthews.
Durham .....	Dr. T. A. Mann.	Scotland .....	Dr. A. W. Hamer.
Edgecombe .....	Dr. S. N. Harrell.	Stanly.....	Dr. J. N. Anderson.
Forsyth.....	Dr. S. F. Pfohl.	Stokes .....	
Franklin .....	Dr. R. F. Yarborough.	Surry .....	Dr. John R. Woltz.
Gaston.....	Dr. L. N. Glenn.	Swain.....	Dr. R. L. Davis.
Gates.....	Dr. W. O. P. Lee.	Transylvania .....	Dr. C. W. Hunt.
Graham .....	Dr. M. T. Maxwell.	Tyrrell.....	
Granville .....	Dr. S. D. Booth.	Union .....	Dr. Henry D. Stewart.
Greene.....	Dr. W. B. Murphy.	Vance.....	Dr. John Hill Tucker.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. W. McGee, Jr.
Halifax.....	Dr. I. E. Green.	Warren.....	Dr. P. J. Macon.
Harnett.....	Dr. L. J. Arnold.	Washington .....	Dr. W. H. Ward.
Haywood .....	Dr. J. R. McCracken.	Watauga.....	Dr. H. McD. Little.
Henderson .....	Dr. J. G. Waldrop.	Wayne.....	Dr. J. B. Outlaw.
Hertford .....	Dr. C. F. Griffin.	Wilkes.....	Dr. John Q. Myers.
Hyde.....	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell .....	Dr. M. R. Adams.	Yadkin .....	Dr. M. A. Royall.
Jackson .....	Dr. William Self.	Yancey .....	Dr. J. B. Gibbs.
Johnston .....	Dr. Thel Hooks.		

# BULLETIN

## OF THE

# NORTH CAROLINA BOARD OF HEALTH

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*Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.*

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RICHARD H. LEWIS, M. D., <i>Secretary and Treasurer</i> , Raleigh.	

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VOL. XXI.

MAY, 1906.

No. 2.

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### WHEN AND HOW SHOULD THE TUBERCULOUS PATIENT BE TREATED?\*

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BY F. M. POTTENGER, PH.M., M.D., MONROVIA, CAL.,

*Member of the American Climatological Association; Corresponding  
Member of the International Central Bureau for the  
Prevention of Consumption, etc.*

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It is the sad experience of all who treat pulmonary tuberculosis that the great majority of individuals who seek aid are not seen until they have advanced to such a stage of the disease that recovery is beyond question. It is the experience of such institutions as Rutland, where it is understood that none but early cases need apply, that more than 50 per cent. of applicants must be rejected, and even then many unfavorable cases are taken.

There seems to be a very vague and erroneous idea on the part of both laymen and physicians as to when the individual is suffering from pulmonary tuberculosis, and also as to when he should begin to take active measures for the cure of the malady when it has been determined that the disease is present.

The patient thinks, as long as he has no pain in the chest and as long as he is not expectorating ounces of purulent sputum, accompanied by a cough which annoys him day and night, that he cannot have

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\*Read before the Pasadena branch of the Los Angeles County Medical Society, November 15, 1904.

anything the matter with his lungs, and when this stage has been reached he only begins to fear that the cough will "go to his lungs" unless something is done for it.

Pulmonary tuberculosis should be treated as early as it can be detected, and it can be detected before there is any serious damage to the lungs, before the bacilli appear in the sputum. The medical profession has mastered appendicitis by early diagnosis, followed by immediate and energetic treatment. The same has been done for diphtheria. The same must be done for tuberculosis. While from 75 to 95 per cent. of early cases of tuberculosis can be cured, not more than 30 per cent. of advanced patients can hope to have their disease arrested, and to the far advanced not even this hope can be offered.

It should be remembered that nearly every individual suffering from incipient pulmonary tuberculosis can be cured by appropriate treatment, and it must also be remembered that nearly every one from whom this is withheld passes on to the advanced stage and dies of pulmonary consumption.

While the fact that pulmonary tuberculosis is a very curable disease, the most curable of all chronic maladies, should be branded upon the minds of the medical fraternity, and while this blessed hope should be speedily made known to the world at large, it should be accompanied by an equally important truth—that the most curable stage is the early stage, before serious harm has been done to the lung and before the general vitality of the patient has been undermined.

In recent years it has been demonstrated to the profession that an early diagnosis, followed by immediate operation, will cure nearly all cases of appendicitis, and to-day professional opinion endorses this so strongly that a man almost fears to treat a case in any other manner. It now remains to demonstrate the same curability of tuberculosis. The evidence is at hand. The facts are obtainable, but they have not been impressed upon the profession.

Skillful treatment of tuberculosis in the incipient stage will show a mortality almost as low as early operative treatment of appendicitis. Even where breaking-down has occurred and bacilli appear in the sputum and a large area of lung tissue is involved (usual so-called first stage), most sanatoria secure happy results in at least 65 per cent. of cases. When we consider that the earliest cases rarely go to our institutions, we must call this an excellent showing.

While the clinical symptoms of early tuberculosis are not distinctive, and may easily be confounded with the signs of other diseases, nevertheless they are sufficient to put us on the alert. The clinical symptoms are at least sufficient in nearly every case to place tuberculosis in the list of diseases that must be excluded before a diagnosis can be reached. Here let me emphasize what I said on a former occasion: "A careful physical examination, made by one who is able to detect the delicate changes produced by the presence of early tuber-



cles, together with painstaking observation and inquiry into clinical symptoms, will either detect or exclude tuberculosis in the majority of cases before the advent of the open stage of the disease with its bacillus-bearing discharges."

It should be remembered as an important aid in making a diagnosis that tuberculosis is most apt to manifest itself when the individual's resisting power is below normal. After a prolonged physical over-exertion, or mental strain, or when reduced by disease, tuberculosis often takes advantage of a man's weakened condition.

#### EARLY SYMPTOMS.

Some of the symptoms which should direct our attention to tuberculosis are:

1. A general run-down condition. The patient finds his energy is waning, notes a decrease in his powers of endurance; ordinary tasks become hard, sleep fails to bring rest, the appetite lags, a few pounds of weight may be lost. This condition, if it is presented to the physician, is too apt to be ridiculed or to be treated by some simple tonic and assurance that nothing is the matter. In such cases tuberculosis must always be thought of.

2. There is apt to be a slight rise in temperature. This rise does not need to be great. It is usually only of a fraction of a degree and occurs most often in the afternoon. In order to detect it, a two-hourly chart should be kept. Sometimes after an invasion of tubercles the disease becomes apparently quiescent and the rise in temperature subsides, but in such cases it can usually be detected by causing the individual to exert himself to the point of becoming tired. In women it will usually show at the time of the menses.

3. An increase in the pulse rate is usually noted. This irritability is especially noted in young persons, and is perhaps of toxic origin.

4. Another symptom sometimes present is a hoarseness, which is perhaps due to the irritation of the vagus.

5. The disease is frequently traced back to a cold from which the patient was very slow to recover. It is not natural for a simple cold to last three or four weeks, and all such should be looked upon with suspicion and be carefully investigated. These patients ascribe a great deal to "colds" that is simply due to the natural progress of the tuberculous process. Unless this erroneous idea is corrected, they will shut themselves up in the house and deny themselves the fresh air which is essential to their recovery.

6. It is unfortunate that we do not have any really definite, unmistakable sign of early tuberculosis, which presents itself in all cases. However, there is one symptom that does present itself often, of which, I am sorry to say, advantage is not always taken. I refer to hæmoptysis. In a certain percentage of cases hæmoptysis is the first sign to the individual that he has any trouble. He goes to his physician, who too often promptly relieves him of all anxiety and at the

same time of the opportunity of getting well by telling him "that it amounts to nothing—it was only from the throat." Throat hæmorrhages are very, very rare, and this initial hæmoptysis should be the means of calling attention to an existing tuberculous process, thus saving the life of nearly every individual in whom it occurs. But, alas! this not true. These patients are comforted by false hopes and lulled into a forgetfulness of their condition until the disease extends and they find themselves suffering from advanced tuberculosis. Now that we know of the curability of early tuberculosis, what a pity that the phrase "throat hæmorrhage" should ever have been coined! The time will shortly come—if, indeed, it is not already here—when it will be as culpable to tell a patient that an initial hæmoptysis is "from the throat" as it would be to treat appendicitis as "cramps." Every case of "blood-spitting" should be considered as a case of tuberculosis, unless proved otherwise.

7. Pleurisy is a symptom that should be carefully watched. It is certainly tuberculosis in many, many cases. Carefully compiled statistics show that many individuals who have active tuberculosis had a premonitory pleurisy months and often years before, and I would call attention to the necessity of carefully examining these patients for tuberculosis and of carefully watching them in after years.

8. A slow recovery after disease, especially after the acute febrile diseases, should be investigated for tuberculosis, for it is a frequent cause of slow recuperation, and during this period of low vitality it often makes rapid progress.

I do not want to be understood as saying that it is an easy matter to detect incipient tuberculosis, for the physical examination of these cases is a delicate matter—the most difficult of all stethoscopic work. The point that I wish to emphasize is: that there are clinical symptoms present in the early period of nearly all cases, which force the exclusion of tuberculosis before a diagnosis can be made. The diagnosis will require the trained ear of one who frequently examines chests, and even then may have to be confirmed or disproved by the tuberculin test. In passing, let me emphasize the importance, the reliability and the harmlessness of this important measure. I know it is feared by some; but how can a man condemn this procedure on the ground of danger and advocate exploratory incisions with the double danger from the operation and the anæsthetic? In this connection permit me to call attention to the recent studies of tuberculin made in the Saranac laboratory, which confirm the harmlessness of this test.

#### EARLY TREATMENT.

When the diagnosis of tuberculosis is once made, what is to be done? This question may seem foolish; nevertheless it is well worthy of consideration. The tuberculous individual usually feels able to go about his work, and as a rule is permitted to do so. Is this right? Is this justice to the patient and those dependent upon him, if such

there be? Is it justice to the medical profession? Most emphatically it is not.

It is very unfortunate that the early symptoms of this disease are not sufficient to make the patient feel ill. If they were, the disease would be easier to cure; but since they are not, the burden is upon our profession. We must not allow the personal desires of the patient to militate against his recovery.

It is my practice to advise every person afflicted with pulmonary tuberculosis to desist from work for a time and to take energetic measures for regaining health, and I am happy to say that I have never had a case of tuberculosis develop in my practice and a patient die of the disease since I have treated them in this way.

While tuberculosis is a curable disease, yet it is a serious one, and it must not be treated lightly, for a life is threatened in every instance.

It is sometimes said that it is wrong to subject these early patients to the annoyance and expense of getting well, because they will often get well of their own accord. Let the innumerable deaths of those who have been neglected answer this supposed argument. If the physician was to treat only such patients as would be unable to live without his aid, he would be compelled to have the power of reading the future, and much of his usefulness would be eliminated. The man who makes this argument in case of tuberculosis must equally criticize the treatment of most cases of pneumonia, typhoid fever and other acute febrile diseases. He must also condemn the operation for appendicitis and gallstones, especially during the quiescent stage; for how can he tell that these patients will ever have another attack if they are let alone? We ask the exercise of the same judgment and common sense in dealing with tuberculosis that we do in dealing with other maladies—no more, no less; and we believe that we should fall short of our duty as physicians and fail in our endeavors for our patients if we should do otherwise than advise immediate treatment when the diagnosis of tuberculosis has been made; for when the process is sufficiently extensive to cause recognizable signs, the chances are against the individual without intelligent help.

What should be the nature of this treatment? In the first place, it should be thorough. In order to be thorough, it must be carried out under the supervision of the physician, for there are very few people who will follow out a plan of treatment if left to themselves, and especially is this true when they feel in fairly good health.

The best place to treat such patients is in a sanatorium, where they are forced to care for themselves and where everything can be done to help restore their health. My patients often tell me that their physicians have told them that they were not really sick enough to go to a sanatorium. This comes from a misconception of the nature of such an institution. A sanatorium is a place to cure tuberculosis, and tuberculosis is most curable when treated in its incipency. In the

history of a case of tuberculosis there is never a time when it is too early for sanatorium treatment.

Often when tuberculosis is diagnosticated the patient is ordered to the country or the mountains, or at least to make some change, and as a rule in these early cases the patient improves. Often the disease quiets down and the patient resumes his work. This has been accomplished by the sacrifice of a little time and at a comparatively small expense.

Why not recommend this change, then, instead of institutional treatment? Let the after history of cases treated in the two ways tell. Tuberculosis is a disease which heals slowly. This so-called recovery of health which follows change is often only apparent. It takes months to get well of incipient tuberculosis. The patient who simply makes a change of surroundings has only the change and rest from which to derive his benefit. He returns to work, knowing nothing of his disease or the things which are necessary to retain the health to which he has been apparently restored. On the other hand, the individual who has been treated in a thoroughly equipped institution has the benefit of the rest and change. He has appropriate food, the proper amount of rest and exercise, a thorough enforcement of the fresh-air principle, and, besides, has advantage of all active measures which science knows to be of value. He returns to work after a few months, when all active symptoms have disappeared, but he well understands that it will take a year or two to make the cure permanent. He is educated in the care of himself, and thus prevents a relapse, while the individual who has simply made the change sooner or later is apt to break down again. His apparent saving has been a loss, and with it perhaps has come the loss of health and life as well.

It is positively wrong to send a patient with tuberculosis away from home to shift for himself before he has been thoroughly trained as to what to do. It is just as rational, and it would be no greater injustice to the individual to allow a pneumonia or typhoid fever patient to shift for himself as to allow one suffering from pulmonary tuberculosis to do so. Individuals suffering from this disease often come to our Western health resorts and tell how their physicians, upon discovering the disease, advised them to go away before another day rolled around, just as though there were a specific climate somewhere that would somehow in some mysterious manner cure them. How much better would a little wholesome, rational advice have been! The cure of tuberculosis must be based upon common sense.

If a physician has not a sanatorium where he can take his patients he can give them good training and intelligent treatment in their own homes and make them aware of the nature of the disease and as to what is necessary to cure it; then, when trained, he can send them away if necessary. When a change of climate is advised, the patient

should be instructed to place himself in the hands of some competent physician when he arrives in the new country.

In treating tuberculosis the first essential is for the patient to thoroughly understand that whether or not he gets well depends on his own individual effort. A physician cannot cure a tuberculous patient, but he can make it possible for the patient to cure himself.

In the way of treatment, these patients need fresh air all the time. If in our climate they can live in a tent with open sides, or on an open porch. If they must stay in the house they should have a light, sunny room, well ventilated, with several windows, if possible, and the bed should be drawn near the windows so as to get the fresh air.

The patient should be put through a process of hardening. He should be in the open air all the time. In winter it is usually unnecessary to raise the temperature of his room above 60°, except when he is dressing in the morning and when undressing, and he should have a cold sponge bath every morning. After a short period of such treatment he will never mention "draught" and will feel almost immune to "taking cold."

In passing, let me say a few words about the open-air treatment of tuberculosis, which is emphasized from every quarter to-day. The lay press and the professional journals are full of "open-air" treatment. This is all well and good. I am a thorough believer in it, but I believe it is time to sound an alarm and call a halt. The cause of the tuberculous patient is in danger of suffering great injury. Pure air is one of the essentials in treating tuberculosis, but it is not all. The idea is becoming prevalent that all that is necessary for the cure of tuberculosis is "open air." Nothing could be farther from the truth. These patients need most careful attention and guidance. The results from open air alone are not going to be satisfactory, and then there will be a revulsion of feeling, when the failure should not be laid to the measure, but to the method. The most absurd things are done in the name of open air. The teachings should go forth that open air is only one measure in the cure of this disease, and that to be most successful it must be used intelligently and combined with other measures which are known to be of value.

As long as activity is present in the chest, and as long as there is a rise of temperature, the patient should take very little exercise, especially should he avoid tiring. After these have subsided, then he should exercise by degrees until he is taking an equivalent of a several-miles walk each day.

These patients must have good, nourishing food. Eggs, preferably raw, milk and meat, together with a liberal amount of fat in the form of butter and bacon, should be the basis of the diet. Easily digested vegetables and fruits are also valuable in keeping the appetite from tiring. All indigestible food, pastry and sweetmeats are to be studiously avoided. A very important measure in all these cases is hydrotherapy. The morning cold rub, the half bath and the sheet

bath are all measures that can be carried out in homes, and they are measures of great importance in treating the disease. They are excellent tonics to the nervous, circulatory and respiratory systems, and have the effect of increasing the appetite, aiding the power of digestion and promoting assimilation and excretion.

The tuberculin preparations in careful hands have shown themselves to be of great value. There is no question that they promote healing in tuberculous areas, and they undoubtedly confer a certain immunity upon those so treated.

The chemical rays of the spectrum, whether taken from the sun or an arc light, seem also to be of value. The beneficial action is due perhaps in part to the action of the light upon the blood, partly to its stimulating properties, partly to its germicidal effect. While this is something that cannot be utilized except with special apparatus, yet I wish to draw attention to it as a field of therapy well worthy of investigation.

These measures, just described, must not be used in any careless, haphazard manner, for they are all capable of doing harm as well as good. However, if they are employed with skill, after a careful study of the needs of each individual patient, they will afford either relief or cure to a very large percentage of tuberculous individuals. But it must be remembered that success in this field of therapy depends on a close attention to details. Things must not only be done, but they must be done to the right patient, at the right time and in the right manner.

If tuberculosis is ever to be mastered it must come through early diagnosis and immediate, energetic, rational treatment. To attain this end the earnest co-operation of the entire medical profession is required.—*New York Medical Journal*.

## REVIEW OF DISEASES FOR APRIL, 1906.

## EIGHTY COUNTIES REPORTING.

Ninety-five counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of April the following diseases have been reported from the counties named:

MEASLES.—Alamance; Alexander, 5; Anson, many; Ashe, 30; Cabarrus, 12; Caldwell, 24; Caswell, several; Chatham, 10; Cleveland, several; Craven, a few; Cumberland, general; Dare, 2; Davidson; Durham, 20; Forsyth, many; Gaston, 40; Gates; Graham, 7; Greene, epidemic; Guilford, 19; Harnett, several; Iredell, 3; Lenoir, many; Lincoln, many; McDowell, 12; Mecklenburg; Montgomery; Onslow; Person; Pitt, general; Randolph, 15; Robeson, epidemic; Rockingham; Rowan, a great many; Rutherford, 4; Scotland, several; Surry, 10; Union, epidemic; Vance, a few; Wake, 1; Yancey, several—41 counties.

WHOOPING-COUGH.—Alamance; Alexander, 15; Anson; Burke, a few; Caldwell, 24; Caswell, several; Chatham, 12; Cleveland, several; Craven, 1; Cumberland; Davidson; Duplin, 20; Durham, 5; Forsyth, many; Gaston, a few; Graham, 10; Greene, 2; Guilford, 3; Harnett, several; Iredell, 4; Lenoir, many; Lincoln, many; McDowell, 10; Mecklenburg; Mitchell, many; Montgomery; Person; Randolph, 25; Robeson, epidemic; Rockingham; Rowan, several; Transylvania, several; Union, a few; Wake, 3; Yancey, several—34 counties.

SCARLATINA.—Brunswick, 1; Cherokee, 2; Craven, 1; Forsyth, 1; Iredell, 1; Jackson, 2—6 counties.

DIPHTHERIA.—Cherokee, 1; Duplin, 1; Edgecombe, 4; Granville, 1; Guilford, 1; Hertford, 3; Johnston, 1; Lenoir, 1; Macon, 3; Mecklenburg; New Hanover, 2; Randolph, 2; Union, 1—13 counties.

TYPHOID FEVER.—Ashe, 6; Caldwell, 1; Caswell, 1; Chatham, 4; Chowan, 1; Cumberland; Davidson; Gates, 1; Graham, 1; Guilford, 3; Haywood, 3; Iredell, 2; Macon, 4; Martin, a few; Mitchell, a few; New Hanover, 6; Randolph, 1; Robeson, a few; Rowan, a few; Sampson, a few; Union, several; Wake, 3; Wilkes, 1; Yancey, a few—24 counties.

MALARIAL FEVER.—Camden, in all parts; Currituck; Davidson; Edgecombe, in all parts; Gaston; Gates; Onslow; Rowan—8 counties.

MALARIAL FEVER, HEMORRHAGIC.—Onslow.

BOWEL DISEASES.—Brunswick, Cumberland, Currituck, Gates, Lincoln, New Hanover, Robeson, Rockingham, Wake and Yadkin—10 counties.

INFLUENZA.—Gates; Graham; Hertford, general; Macon, general; Mitchell; Richmond; Wilkes, general; Yancey, general—8 counties.

PNEUMONIA.—Alexander, 12; Beaufort, 1; Camden, 3; Catawba, 1; Chatham, 2; Chowan, 1; Cumberland; Davidson; Duplin, 2; Gaston, 15; Gates; Graham, 2; Harnett, several; Hyde, 3; Lenoir, several; McDowell, 20; Martin, a few; Mecklenburg; Mitchell; Robeson, a few; Sampson; Union, several; Wake, 13; Yadkin; Yancey, a few—25 counties.

MENINGITIS, CEREBRO-SPINAL.—Brunswick, 1; Camden, 4; Gaston, 2; Yancey, several.

MUMPS.—Harnett, several; Onslow; Wilkes.

VARICELLA.—Jackson.

SMALLPOX.—Anson, a few; Bertie, a few; Bladen, 1; Brunswick, 3; Columbus, 18; Craven, 1; Cumberland, 18; Duplin, 4; Franklin, 1; Gates, very many; Granville, 1; Guilford, 3; Halifax, 20; Hertford, 16; Hyde, 50; Macon, 3; Mecklenburg, 9; Nash, 17; New Hanover, 2; Pasquotank, 13; Pender, many; Perquimans, a few; Pitt, 1; Polk, 2; Robeson, 8; Sampson, 1; Warren, 1; Washington, 2; Wayne, 3—29 counties.

CHOLERA, IN HOGS.—Camden, Cherokee, Jackson.

DISTEMPER, IN HORSES.—Burke, Jackson, Madison.

ROUP, IN CHICKENS.—Gaston.

No diseases reported from Clay, Orange, Polk, Swain, Watauga and Wilson.

No reports received from Alleghany, Bertie, Columbus, Davie, Franklin, Halifax, Henderson, Jones, Moore, Northampton, Pamlico, Pender, Perquimans, Stanly and Warren.



## SUMMARY OF MORTUARY REPORTS FOR APRIL, 1906.

## TWENTY-ONE TOWNS.

	<i>White.</i>	<i>Col'd.</i>	<i>Total.</i>
Aggregate population .....	101,400	65,450	166,850
Aggregate deaths .....	101	141	242
Representing temporary annual death-rate per 1,000 .....	11.9	25.9	17.4
<i>Causes of Death.</i>			
Typhoid fever .....	3	0	3
Malarial fever .....	3	2	5
Whooping-cough .....	1	6	7
Measles .....	1	1	2
Pneumonia .....	15	18	33
Consumption .....	7	29	36
Brain diseases .....	5	4	9
Heart diseases .....	9	19	28
Neurotic diseases .....	1	4	5
Diarrhoeal diseases .....	11	8	19
All other diseases.....	38	43	81
Accident .....	4	5	9
Suicide .....	3	0	3
Violence .....	0	2	2
	<hr/>	<hr/>	<hr/>
	101	141	242
Deaths under five years.....	20	41	61
Still-born .....	7	13	20

**Mortuary Report for April, 1906.**

TOWNS AND REPORTERS.	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH- RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL By Races.	By Towns.	DEATHS. Deaths under five years. Still-born.	
		By Races.	Total.	By Races.	Total.																				
Charlotte .....	W.	12,000		12.0							1	1	1						8	1		12		3	2
Dr. F. O. Hawley.	C.	8,000	20,000	31.5	19.8					1	1	4	6						9			21	33	8	2
Durham .....	W.	12,000		15.0																		15		3	
Dr. T. A. Mann.	C.	6,000	18,000	28.0	19.3					3		1		3	5			3	3			14	29	6	5
Edenton .....	W.	1,500		0.0																		0			
Dr. Thomas J. Hoskins	C.	2,500	4,000	19.2	12.0																	4	4		
Elizabeth City .....	W.	6,000		10.0															4	1		5		2	1
Dr. H. D. Walker.	C.	4,000	10,000	24.0	14.4							2	2					1	3			8	13	3	
Fayetteville .....	W.	3,500		0.0																		0			
Dr. A. S. Rose.	C.	2,500	6,000	28.8	12.0									1	1	3			1			6	6		
Goldsboro .....	W.	5,000		4.8								2										2			
Robt. A. Creech, H. O.	C.	3,000	8,000	44.0	19.5			1				2	4		1			3				11	13	4	2
Greensboro .....	W.	10,000		13.2		1						5	1					1	3			11	20	4	1
Dr. Edmund Harrison.	C.	5,000	15,000	21.6	16.0							2	4						2		1	9	2		
Henderson .....	W.	2,000		0.0																		0			
Dr. G. A. Coggeshall.	C.	2,300	4,300	10.4	5.6									1	1							2	2	1	
Lexington .....	W.	3,000		8.0		1							1									0			
John H. Moyer, Mayor	C.	600	3,600	0.0	6.7																	0	2		
Marion .....	W.	1,500		0.0																		0			
Dr. B. L. Ashworth.	C.	100	1,600	0.0	0.0																	0	0		
Oxford .....	W.	1,400		17.1										1					1			2			
Dr. S. D. Booth.	C.	1,400	2,800	17.1	17.1									1								2	4	1	
Raleigh .....	W.	9,000		21.3								3	1		1			2	7	1	1	16			
T. P. Sale, Clerk B. H.	C.	7,000	16,000	13.7	18.0							2	1					1	2	2		8	24		
Salem .....	W.	3,400		21.2								1			2				3						2
S. E. Butner, Supt. H.	C.	400	3,800	30.0	22.1					1												1	7		
Salisbury .....	W.	7,400		1.6															1			1		1	
Dr. H. T. Trantham.	C.	3,600	11,000	10.0	4.4								2		1							3	4		
Southport .....	W.	900		0.0																		0			
Dr. J. A. Doshier.	C.	500	1,400	0.0	0.0																	0	0		
Tarboro .....	W.	2,500		9.6															2						
Dr. S. N. Harrell.	C.	1,000	3,500	36.0	17.1									1					2			3	5		
Wadesboro .....	W.	1,200		0.0																		0			
Dr. J. H. Bennett.	C.	800	2,000	15.0	6.0														1			1			
Washington .....	W.	3,500		10.3								3													
Dr. John G. Blount.	C.	3,000	6,500	24.0	16.6			1				1	1		1	1			1			6		3	9
Weldon .....	W.	800		30.0															2			2			
J. T. Gooch, Mayor.	C.	750	1,550	16.0	23.2															1		1	3		
Wilmington .....	W.	11,000		17.4		1		3				2						3	5		2	16		4	
Dr. Charles T. Harper.	C.	10,000	21,000	40.8	28.6				1			3	5	2	8	3			10	1		134	50	12	6
Wilson .....	W.	3,800		18.9					1									1	2						
Dr. W. S. Anderson.	C.	3,000	6,800	28.0	22.6							1		2					4			7	13	3	4

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

### County Superintendents of Health.

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Alamance .....	Dr. George W. Long.	Jones.....	Dr. N. G. Shaw.
Alexander .....	Dr. O. L. Hollar.	Lenoir .....	Dr. C. L. Pridgen.
Alleghany .....	Dr. Robt. Thompson.	Lincoln .....	Dr. R. W. Petrie.
Anson .....	Dr. J. H. Bennett.	McDowell .....	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon .....	Dr. W. A. Rogers.
Beaufort .....	Dr. John G. Blount.	Madison .....	Dr. W. J. Weaver.
Bertie .....	Dr. H. V. Dunstan.	Martin.....	Dr. W. E. Warren.
Bladen .....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick .....	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe .....	Dr. D. E. Sevier.	Montgomery .....	Dr. J. B. Shamburger.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash .....	Dr. J. P. Battle.
Caldwell .....	Dr. C. L. Wilson.	New Hanover .....	Dr. W. D. McMillan.
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret .....	Dr. F. M. Clarke.	Onslow.....	Dr. Cyrus Thompson.
Caswell .....	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba .....	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. J. H. Taylor.	Pasquotank .....	Dr. J. B. Griggs.
Cherokee.....	Dr. J. A. Abernathy.	Pender.....	Dr. R. J. Williams.
Chowan .....	Dr. T. J. Hoskins.	Perquimans .....	Dr. C. C. Winslow.
Clay .....	Dr. J. M. Sullivan.	Person .....	Dr. J. A. Wise.
Cleveland .....	Dr. B. H. Palmer.	Pitt.....	Dr. Joseph E. Nobles.
Columbus.....	Dr. H. B. Maxwell.	Polk .....	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph .....	Dr. A. M. Bulla.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. L. D. McPhail.
Currituck .....	Dr. H. M. Shaw.	Robeson .....	Dr. H. T. Pope.
Dare .....	Dr. W. B. Fearing.	Rockingham .....	Dr. Sam Ellington.
Davidson .....	Dr. Joel Hill.	Rowan.....	Dr. J. S. Brown.
Davie .....	Dr. M. D. Kimbrough.	Rutherford.....	Dr. E. B. Harris.
Duplin .....	Dr. A. J. Jones.	Sampson .....	Dr. J. O. Matthews.
Durham .....	Dr. T. A. Mann.	Scotland .....	Dr. A. W. Hamer.
Edgecombe .....	Dr. S. N. Harrell.	Stanly.....	Dr. J. N. Anderson.
Forsyth.....	Dr. S. F. Pfohl.	Stokes .....	
Franklin .....	Dr. R. F. Yarborough.	Surry .....	Dr. John R. Woltz.
Gaston.....	Dr. L. N. Glenn.	Swain.....	Dr. R. L. Davis.
Gates.....	Dr. W. O. P. Lee.	Transylvania .....	Dr. C. W. Hunt.
Graham .....	Dr. M. T. Maxwell.	Tyrrell.....	
Granville .....	Dr. S. D. Booth.	Union .....	Dr. Henry D. Stewart.
Greene.....	Dr. W. B. Murphy.	Vance.....	Dr. John Hill Tucker.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. W. McGee, Jr.
Halifax .....	Dr. I. E. Green.	Warren.....	Dr. P. J. Macon.
Harnett.....	Dr. L. J. Arnold.	Washington .....	Dr. W. H. Ward.
Haywood .....	Dr. J. R. McCracken.	Watauga.....	Dr. H. McD. Little.
Henderson .....	Dr. J. G. Waldrop.	Wayne.....	Dr. J. B. Outlaw.
Hertford .....	Dr. C. F. Griffin.	Wilkes.....	Dr. John Q. Myers.
Hyde.....	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell .....	Dr. M. R. Adams.	Yadkin .....	Dr. M. A. Royall.
Jackson.....	Dr. William Self.	Yancey .....	Dr. J. B. Gibbs.
Johnston .....	Dr. Thel Hooks.		



[You are asked to fill out and mail one of these forms to the Superintendent of Health of your county on or before the third of each month, that he may use it in making his report to the Secretary of the State Board.]

Have any of the following diseases occurred in your practice during the month just closed? If so, state number of cases.

Whooping-cough ----- Typhoid Fever -----

Measles ----- Typhus Fever -----

Diphtheria ----- Yellow Fever -----

Scarlet Fever ----- Cholera -----

Pernicious Malarial Fever ----- Smallpox -----

Hemorrhagic Malarial Fever ----- Cerebro-spinal Meningitis -----

What have been the prevailing diseases in your practice?

Has any epidemic occurred among domestic animals? If so, what?

What is the sanitary condition of your section, public and private?

General Remarks: -----

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----- M. D.

----- 190 ----- N. C.



# BULLETIN

## OF THE

# NORTH CAROLINA BOARD OF HEALTH

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*Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.*

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RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

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No. 3.

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### THE PRESIDENT'S ADDRESS TO THE CONFERENCE OF STATE AND PROVINCIAL BOARDS OF HEALTH OF NORTH AMERICA.

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(Annual Meeting, Washington, D. C., May 21, 1906.)

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BY RICHARD H. LEWIS, M. D., RALEIGH, N. C.

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*Gentlemen of the Conference:*—Your action a year ago in electing me president of the Conference was as unexpected as it was gratifying. It had never occurred to me that I was made of presidential timber, and I have ever been content to serve as an humble private in the ranks. I can but feel that you were influenced more by the kindness of your hearts than by the excellency of your judgment. But whatever may have been the inspiring motive, I wish to express to you my deep appreciation of the great honor you have conferred upon me. Although necessarily small in numbers, I feel quite sure that there is no health organization, from the practical point of view, more valuable than this, made up as it is of the active health officers of the States of our Union and of the Provinces of the Dominion of Canada—of the men who are foremost in the work for the public health on this continent. It is especially important, therefore, that our Association should be made as perfect and effective as possible.

Interest in the public health, as we are glad to believe, is steadily growing, increasingly so with succeeding years. The scope of the work is widening and the machinery for its performance is, consequently, becoming more complex and in need of careful adjustment

that it may run smoothly. For example, the Federal element is gradually becoming more prominent. Only a few years ago the functions of the Marine Hospital Service were enlarged, as is shown in brief by the addition of the words "Public Health" to the title of that bureau. And just at this time there is pending in the Senate the National Quarantine Bill, which has already passed the House of Representatives. While these measures are, I believe, for the public good, there is danger of friction between the National and the State organizations. Such friction would injure the general cause, and there is no reason why it should occur, if the careful adjustment referred to is made in the beginning. Cordial coöperation is greatly to be desired, and would undoubtedly inure to the benefit of all parties. How, will be brought out in the discussion of one of the subjects on the program, and, doubtless, also in the Conference with the Surgeon-General, as required by the amended law, two days hence. In this way we are in relation with the general government.

Would it not be well for us to spread out in another direction by inviting the boards of health of our large cities to affiliate with us? In my opinion it would probably increase our usefulness, although it would, to some extent, change the character of our organization.

The most stupendous single problem that confronts the sanitarian is, admittedly, the prevention of tuberculosis. Prior to the discovery of its cause in the tubercle bacillus, by Koch, a quarter of a century ago, and the consequent demonstration of its infectious character, and, therefore, its preventability, mankind was helpless against its ravages. The door of hope was closed and, apparently, bolted. But what a change in the outlook has taken place in the last few years, and with every passing day the prospect becomes brighter and brighter! The world has waked up to its duty in relation to this greatest enemy to life and health, and in every civilized country thousands are enlisted for its defeat.

It would be a work of supererogation, in this company, for me to recapitulate the various agencies that have been employed in this contest, but it seems that the goal to which most of us aspire is the establishment of State sanatoria for the treatment of the disease. While admitting the great value of sanatoria from the point of view of cure, and of prevention as well by their educational effect through the patients after they return to their homes, I am convinced that the attempt to secure sanatoria is not the wisest course of action to be pursued in the present stage of development of the anti-tuberculosis movement. As sanitarians it is our business not to cure disease, much as we may rejoice in its cure, but to prevent it. Consequently, the phase of sanatorium work that most appeals to us is its value in preventing tuberculosis. But do we get value received? Could we not obtain much greater results from the same amount of money expended in a different way? I believe we could—certainly in the way of prevention, and probably, nearly, if not as much, in cures.



According to the reports of the excellent sanatoria now in existence in our country, the cost of maintenance per patient is somewhat more than a dollar a day—we will say one dollar. The amount of money required for this part of the expense of a sanatorium accommodating one hundred patients would be, therefore, \$36,500. Add to this interest on the investment in plant, repairs, insurance, etc., and we would have a total sum well over \$40,000. As the average time spent in the sanatorium is six months, the total number of consumptives cared for would be two hundred per annum—little more than a drop in the bucket in view of the thousands of cases of tuberculosis to be found in every State. It is claimed that patients returning to their homes from sanatoria would be object-lessons to their neighbors; and so they would, but to a very limited extent. It should be remembered that more than half—and a glorious record it is—return cured, or with the disease arrested, and, therefore, no longer requiring the constant and watchful care of the sputum, which is the very essence of prevention. To the few of their tuberculous acquaintances they would be an object-lesson to the extent of demonstrating the value of sanatorium treatment. But how much good would that do them when they could not get into a sanatorium? They would, doubtless, have some influence in inducing them to adopt, to a greater or less extent, better methods in the care and treatment of themselves; and so far so good. But how about the general public? In their usually inconspicuous lives they would make very little impression on the general public, and we desire to educate all the people, as well as the tuberculous individual, to promote and develop a sound and intelligent public opinion on the subject among the well, not less than ten per cent. of whom are doomed to finally succumb to tuberculosis. So it appears that the sanatorium for the treatment of tuberculosis, while a most admirable institution, is limited in its scope, both preventive and curative.

We now come to the question: How can we expend \$40,000 a year to the best advantage in this great crusade in which we are all engaged? I answer, by the education of the people through competent teachers, regularly employed for that business alone, working on a well-considered, thoroughly organized plan. With the exception of the higher officers, the troops now in the field are volunteers, with whom the work must, necessarily, be a side issue and done in a more or less desultory and imperfect way. We want thoroughly trained regulars at the front, who shall not only themselves fight, but study and instruct the volunteers.

To make clear what I mean, I will set forth somewhat in detail the scheme I have in mind. First and foremost, an earnest, conscientious man, who is a good talker and organizer as well, should be employed. He should have a good assistant and be equipped fully with stereopticon and slides, charts and literature for distribution. It would be his duty to follow an itinerary made out by his superiors, the State Board of Health, and visit not only the cities, but the

towns, villages, and hamlets—literally “setting the woods on fire” on the subject of tuberculosis. By the way he should incidentally sow other sanitary seed, for tuberculosis is not the only enemy to be met. The statement in his announcement that he would also have something to say on the prevention of typhoid fever, and, when in localities so afflicted, on malaria and mosquitoes, would add to the interest and increase his audiences. Before filling an appointment he should write the editors of the local newspapers, enclosing an advertisement, or notice, of the meeting, asking its insertion with such favorable comments as they might see fit to make. The newspapers could do much in interesting the people and getting them out. But a newspaper notice is not sufficient. In addition to that he should have his assistant, a few days before his appointment, address and mail a special letter to every physician, clergyman, lawyer, the presidents and secretaries of women’s clubs, teachers, and a number of the more prominent men in other callings, making a particular appeal to each individual as a public-spirited citizen, not only to attend the meeting himself, but to lend his aid in inducing as many as possible to be present. Physicians should be especially urged to notify their tuberculous patients and advise them to go. These letters should be carefully prepared in advance and printed in quantity. A direct appeal to the individual is far more effective than a general notice and invitation to the community as a whole, although this should not be omitted. During the meeting pertinent literature should be distributed to the audience by hand, and notice given, to be repeated in the papers, that it could be found at certain selected places. The public should also be notified that the lecturer could be consulted during certain hours at a place named. He should also exhibit and explain the various devices for caring for the sputum, having with him samples of such as experience has shown to be the best. After his address he should form then and there, if possible, an anti-tuberculosis league or society, or at least set in motion the machinery for the establishment of such an organization. He should likewise request the Mayor to call a special meeting of the Board of Aldermen for the next day and invite all citizens interested to attend. At this meeting he should urge the enactment of such ordinances on the subject as have been found desirable and useful, and have with him printed copies of the same, so that action might be taken before adjournment. “Now is the accepted time,” not only in religion, but in nearly everything else. He should heat the iron red-hot with his address and hammer it into shape before it cools. In the meantime his assistant should visit the druggists and news-stands and arrange with them to keep on hand a supply of literature for distribution. If in the county town, he should see the Sheriff and in a personal interview enlist his cooperation and arrange with him to have his deputies tack up in public places all over the county, particularly at country stores and churches, a placard of strong manilla paper with the principal rules for the prevention of tuberculosis printed thereon.

Or, if allowed by the regulations of the Post-office Department, he might get the rural delivery carriers to do this.

The general management and control of the campaign should be in the hands of the Secretary, or executive officer of the State Board of Health, who should be provided with a special clerk for this work alone.

As the journeys from place to place would be short, and as the smaller towns, villages, and hamlets would not require more than a day, it is within bounds to say that two hundred points could be made in a year. A free "show" of any kind in a small place having no theater is always a drawing card, and if well advertised, as it should be, it is safe to say that the audiences would average one hundred and fifty. This would mean reaching directly 30,000 people during the year, and indirectly, through the newspaper accounts and the talk about the lecture by those present to their acquaintances, very many more.

Now what would all this cost? A liberal estimate would be:

Lecturer .....	\$2,500
Assistant .....	900
Expenses of the two.....	2,500
Postage .....	500
Literature and incidentals.....	1,000

Or, in round numbers..... \$7,500

Dividing \$40,000 by \$7,500, we find that five such evangelists of health could be supported for a year and leave \$2,500 for extra clerical help in the office of the Board of Health. This would mean reaching directly 150,000 people, and indirectly, by permeation through the community of the information, an indefinite number more scattered all over the State. Public interest would be generally aroused and an opinion would be created upon which further advance could be made. After such a campaign it is reasonable to assume that the establishment of sanatoria for the cure of the disease would certainly be much easier of accomplishment than it is at present.

Looking at the question still from our point of view—that of prevention first, and cure incidentally and secondarily—it is my opinion that a modification of the present management of sanatoria would be more effective. Instead of being conducted as institutions for the cure of patients while present, it would be wisest, in my humble opinion, to conduct them rather as tuberculosis schools. Patients, instead of being allowed to remain, on an average, six months, should be strictly limited to one month. By this arrangement 1,200 instead of 200 consumptives could be accommodated in the year. In that time they could be thoroughly instructed in sanatorium methods, both as to prevention and cure, and could continue the treatment at their own homes. Upon leaving the sanatorium a statement of their exact physical condition, ascertained by the real experts in diagnosis employed by the institution, should be given them, as well as a printed

copy of the sanatorium regulations, for the benefit of the family physician. They should keep in touch with the sanatorium by correspondence, either directly or through their physicians, and receive therefrom such further advice as might be indicated. While it is not claimed that this method would be as successful in bringing about cures as the six months' continuous treatment in the sanatorium itself, I do not think it unreasonable to assume that at least one-sixth as many cures would result, in which event the number cured would be the same and the educational effect would be six times as great. I sincerely believe, however, that the total number of cures would be actually greater and the number of cases prevented, in their own families, especially by the proper care of their sputum, habits as to coughing, kissing, etc., would be very greatly increased over the present plan.

The chief practical difficulty in carrying out any scheme to meet the problem that confronts us is that of getting the money. Those of us who have had experience in getting appropriations for health work of any kind from our Legislatures, know how hard it is to do. In most States, certainly in the Southern States, which are far from rich as yet, confronted as they are by the demands upon the treasury for the education of the children, the care of the insane, pensions for the old soldiers of the Confederacy—claims that appeal more urgently to the average legislator than those of the public health—it is especially difficult. An appeal for \$100,000 to establish a sanatorium, with a following annual appropriation of \$20,000—only enough to pay half the running expenses—for a hospital for the treatment of only 200 out of 10,000 cases of tuberculosis, would not be considered for a moment. But \$7,500 annually for two years for the instruction of the people might be gotten, and if effectively used would, in time, lead to greater things. We do not look to the State alone, however, for the sinews of war, but to the philanthropist as well. The hearts of many have been touched by a sad personal experience in their own families, and I believe some could be found who would be willing to support a health evangelist for a year if the matter were properly explained to them. In this way the movement might be begun.

The essential ideas in what I have thus rather crudely set forth are, first, the education of the people on the subject of tuberculosis, by far the most important feature of this great movement; and second, that the best method of accomplishing this is by a regularly engaged and paid force, devoting all its time and effort to this one thing, and working on a definite and well-considered plan, leading and inspiring the volunteer anti-tuberculosis societies already in existence and organizing others, and by modifying the management of sanatoria.

It is with diffidence that I have ventured to air my views to such an audience as this, composed as it is of the leading health officers of America; but if any one of you should find among them a suggestion in the least helpful, I would feel more than content.

## REVIEW OF DISEASES FOR MAY, 1906.

## SEVENTY-SEVEN COUNTIES REPORTING.

Ninety-four counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of May the following diseases have been reported from the counties named:

MEASLES.—Anson, many cases; Cabarrus, 31; Camden; Cumberland; Dare, 6; Davidson; Davie, many; Durham, 22; Forsyth, many; Gaston, many; Greene, a few; Guilford, 6; Harnett, several; Martin, 5; Mitchell; Onslow; Orange, a few; Person; Randolph, 12; Robeson, a few; Rowan, a few; Rutherford; Scotland, several; Stanly, a few; Surry, 5; Union, a few; Vance, a few; Wake, 2; Wilkes, 12; Yadkin, 4; Yancey, several—31 counties.

WHOOPING-COUGH.—Alamance; Alleghany, in all parts; Anson, many; Burke, a few; Cabarrus, 24; Caldwell, 8; Catawba, 4; Chowan, 3; Cumberland; Currituck, 15; Davidson; Davie, many; Durham, 4; Forsyth, many; Gaston, several; Graham, 6; Greene, 10; Haywood, several; Iredell, 10; Johnston, in all parts; McDowell, 6; Mecklenburg; Mitchell; New Hanover, a few; Orange, many; Randolph, 10; Robeson, a few; Rowan, a few; Rutherford; Scotland, several; Stanly, epidemic; Wake, 10; Washington, 5; Wilkes, 50; Yancey, several—35 counties.

SCARLATINA.—Cherokee, 2; Craven, 2; Graham, 1; New Hanover, 1; Yadkin, 2—5 counties.

DIPHTHERIA.—Greene, 2; Henderson, 1; Hertford, 4; Jackson, 2; Mecklenburg; New Hanover, 1; Randolph, 1; Rutherford, a few—8 counties.

TYPHOID FEVER.—Bladen, 2; Brunswick, 1; Caldwell, 15; Camden, 3; Catawba, 2; Chowan, 1; Cleveland, a few; Cumberland; Davidson; Davie, a few; Durham, 1; Forsyth, a few; Gates, 1; Graham, 3; Guilford, 4; Haywood, 5; Iredell, 2; Jackson, 2; Lincoln, 8; Martin, a few; Mecklenburg; Mitchell, a few; Nash, 3; New Hanover, 4; Onslow; Orange, 1; Randolph, 2; Richmond, a few; Robeson, a few; Rowan, a few; Rutherford; Sampson, a few; Scotland, 6; Stanly, 1; Surry, 2; Union, a few; Wake, 9; Warren, 2; Wilkes, 1; Yancey, a few—40 counties.

MALARIAL FEVER.—Bladen; Brunswick; Camden, in all parts; Currituck, in all parts; Gates, many; Johnston, in all parts; Onslow; Rowan, in all parts; Stanly—9 counties.

MALARIAL FEVER, PERNICIOUS.—Bladen, 1.

BOWEL DISEASES.—Bertie, Bladen, Brunswick, Burke, Camden, Catawba, Cherokee, Cleveland, Currituck, Duplin, Gates, Guilford, Hertford, Iredell, Lincoln, McDowell, Martin, Mecklenburg, Northampton, Person, Richmond, Rutherford, Sampson, Stanly, Surry, Union, Wake, Washington, Wilkes, Yadkin—30 counties.

INFLUENZA.—Madison.

MENINGITIS, CEREBRO-SPINAL.—Yancey, 2 or 3.

MUMPS.—Onslow, Stanly.

PNEUMONIA.—Alamance; Alleghany, 2; Cabarrus, 3; Davidson; Gaston, many; Hertford, 1; Lincoln, 2; Martin, a few; Mecklenburg; Wake, 9; Warren, 4; Yancey, a few—12 counties.

RHEUMATISM.—Union.

SMALLPOX.—Anson, several; Bertie, a few; Cabarrus, 1; Camden, 10; Chowan, 3; Craven, 1; Cumberland, 8; Currituck, 9; Davie, 6; Durham, 1; Forsyth, 4; Guilford, 3; Harnett, 7; Hertford, 20; Mecklenburg, 2; Robeson, a few; Sampson, 5; Scotland, 3; Union, 1; Washington, 8; Wayne, 3—21 counties.

CHOLERA, IN CHICKENS.—Davie.

CHOLERA, IN HOGS.—Hertford, Northampton.

DISTEMPER, IN HORSES.—Alleghany, Burke, Jackson, Randolph.

MURRAIN, IN CATTLE.—Caldwell, 1.

No diseases reported from Beaufort, Buncombe, Carteret, Edgecombe, Pasquotank, Pitt, Polk, Swain, Transylvania, and Wilson.

No reports received from Alexander, Ashe, Caswell, Clay, Columbus, Franklin, and Rockingham.

## SUMMARY OF MORTUARY REPORTS FOR MAY, 1906.

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 TWENTY TOWNS.
 

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	<i>White.</i>	<i>Col'd.</i>	<i>Total.</i>
Aggregate population .....	99,350	62,950	162,300
Aggregate deaths .....	133	132	265
Representing temporary annual death-rate per 1,000 .....	16.1	25.2	19.6
<i>Causes of Death.</i>			
Typhoid fever .....	3	1	4
Scarlet fever .....	0	1	1
Malarial fever .....	0	1	1
Diphtheria .....	0	1	1
Whooping-cough .....	2	2	4
Pneumonia .....	3	11	14
Consumption .....	12	22	34
Brain diseases .....	14	5	19
Heart diseases .....	8	15	23
Neurotic diseases .....	6	1	7
Diarrhœal diseases .....	36	19	55
All other diseases.....	40	48	88
Accident .....	7	5	12
Suicide .....	2	0	2
	<hr/>	<hr/>	<hr/>
	133	132	265
Deaths under five years.....	46	44	90
Still-born .....	5	8	13

## Mortuary Report for May, 1906.

TOWNS AND REPORTERS.	RACES.	POPULATION.		TEMPORARY ANNUAL DEATH- RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhoeal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL By Races.	By Towns.	DEATHS. Deaths under five years.	Still-born.
		By Races.	Total.	By Races.	Total.																				
<b>Charlotte</b> .....	W.	14,000	24,000	12.0	16.5							1			4	8	1					14	33	7	1
Dr. F. O. Hawley.	C.	10,000		22.8								4	3					12				19	33	6	1
<b>Durham</b> .....	W.	12,000	18,000	14.2	25.3				1			1	2	2								15	38	5	2
Dr. A. T. Mann.	C.	6,000		46.0					1			7		3		7	4	1				23	38	6	2
<b>Edenton</b> .....	W.	1,500	4,000	0.0	6.0													2				0	2		
Dr. Thomas J. Hoskins	C.	2,500		9.6																		2			
<b>Elizabeth City</b> .....	W.	6,000	10,000	12.0	16.8								1	1	2			2				6	14	2	
Dr. H. D. Walker.	C.	4,000		24.0								1	1			2	3	1				8	14	4	1
<b>Fayetteville</b> .....	W.	3,500	6,000	10.3	20.0				1				2					1				3	10	3	1
Dr. A. S. Rose.	C.	2,500		33.6								1	1	1	1			2				6	15	3	
<b>Goldsboro</b> .....	W.	5,000	8,000	21.6	22.5				1				1	2				2	2	1		9	15	3	
Robt. A. Creech, H. O.	C.	3,000		24.0								1	1				1	2				6	15	3	
<b>Greensboro</b> .....	W.	10,000	15,000	25.6	30.4								3	1	2		11	4	1	1		23	38	9	1
Dr. Edmund Harrison.	C.	5,000		36.0								1	1	1		3	9					15	38	8	2
<b>Henderson</b> .....	W.	2,000	4,300	6.0	27.9								1									1	10		
Dr. G. A. Coggeshall.	C.	2,300		46.9		1						3		3				1	1			9			
<b>Lexington</b> .....	W.	3,000	3,600	16.0	16.7								1	1				1	1			4	5	1	
John H. Moyer, Mayor	C.	600		20.0																		1			
<b>Marion</b> .....	W.	1,500	1,600	8.0	7.5																	0	1		
Dr. B. L. Ashworth.	C.	100		0.0																		0			
<b>Oxford</b> .....	W.	1,400	2,800	17.1	17.1															2		2	4	1	
Dr. S. D. Booth.	C.	1,400		17.1									1									2			
<b>Rocky Mount</b> .....	W.	3,500	5,000	34.3	26.4									3			7					10	11	7	1
Dr. L. C. Covington.	C.	1,500		8.0											1							1			
<b>Salen</b> .....	W.	3,400	3,800	7.1	12.6													2				2	4		
S. E. Butner, Supt. H.	C.	400		60.0														2				2		1	
<b>Salisbury</b> .....	W.	7,400	11,000	14.6	15.3				1							1	2	3				9	14	2	
Dr. H. T. Trantham.	C.	3,600		16.7											1		1	2	1			5		1	
<b>Southport</b> .....	W.	900	1,400	13.3	17.1														1			1	2		
Dr. J. A. Doshier.	C.	500		24.0																		1			
<b>Tarboro</b> .....	W.	2,500	3,500	24.0	17.1																	0			
Dr. S. N. Harrell.	C.	1,000		0.0																		0			
<b>Wadesboro</b> .....	W.	1,200	2,000	20.0	12.0								1		1							2	2		
Dr. J. H. Bennett.	C.	800		0.0																		0			
<b>Weldon</b> .....	W.	750	1,500	32.0	32.0														2			2	4	1	
J. T. Gooch, Mayor.	C.	750		32.0															2			2			
<b>Wilmington</b> .....	W.	16,000	30,000	16.5	19.2	3						1	2	2	1	3	5	3	2			22	48	9	
Dr. Charles T. Harper.	C.	14,000		22.3		1		1				4	3	2	4	1	2	7	1			26		9	1
<b>Wilson</b> .....	W.	3,800	6,800	6.3	8.8								1						2			2	5		
Dr. W. S. Anderson.	C.	3,000		12.0																		3			

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."



### County Superintendents of Health.

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Alamance .....	Dr. George W. Long.	Jones.....	
Alexander .....	Dr. O. L. Hollar.	Lenoir .....	Dr. C. L. Pridgen.
Alleghany .....	Dr. B. E. Reeves.	Lincoln .....	Dr. R. W. Petrie.
Anson .....	Dr. J. H. Bennett.	McDowell .....	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon .....	Dr. W. A. Rogers.
Beaufort .....	Dr. John G. Blount.	Madison .....	Dr. W. J. Weaver.
Bertie .....	Dr. H. V. Dunstan.	Martin.....	Dr. W. E. Warren.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin
Brunswick .....	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe .....	Dr. D. E. Sevier.	Montgomery .....	Dr. J. B. Shamburger.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod
Cabarrus.....	Dr. R. S. Young.	Nash .....	Dr. J. P. Battle.
Caldwell .....	Dr. C. L. Wilson.	New Hanover .....	Dr. W. D. McMillan.
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret .....	Dr. F. M. Clarke.	Onslow.....	Dr. Cyrus Thompson.
Caswell .....	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba .....	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. J. H. Taylor.	Pasquotank .....	Dr. J. B. Griggs.
Cherokee.....	Dr. J. A. Abernathy.	Pender.....	Dr. R. J. Williams.
Chowan.....	Dr. T. J. Hoskins.	Perquimans .....	Dr. C. C. Winslow.
Clay .....	Dr. J. M. Sullivan.	Person .....	Dr. J. A. Wise.
Cleveland .....	Dr. B. H. Palmer.	Pitt.....	Dr. Joseph E. Nobles.
Columbus.....	Dr. H. B. Maxwell.	Polk .....	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph .....	Dr. A. M. Bulla.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. L. D. McPhail.
Currituck .....	Dr. H. M. Shaw.	Robeson .....	Dr. H. T. Pope.
Dare .....	Dr. W. B. Fearing.	Rockingham .....	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan.....	Dr. J. S. Brown.
Davie.....	Dr. M. D. Kimbrough.	Rutherford.....	Dr. E. B. Harris.
Duplin .....	Dr. A. J. Jones.	Sampson.....	Dr. J. O. Matthews.
Durham .....	Dr. T. A. Mann.	Scotland .....	Dr. A. W. Hamer.
Edgecombe .....	Dr. S. N. Harrell.	Stanly.....	Dr. J. N. Anderson.
Forsyth.....	Dr. S. F. Pfohl.	Stokes .....	
Franklin .....	Dr. R. F. Yarborough.	Surry .....	Dr. John R. Woltz
Gaston.....	Dr. L. N. Glenn.	Swain.....	Dr. R. L. Davis.
Gates.....	Dr. W. O. P. Lee.	Transylvania .....	Dr. C. W. Hunt.
Graham.....	Dr. M. T. Maxwell.	Tyrrell.....	
Granville .....	Dr. S. D. Booth.	Union .....	Dr. Henry D. Stewart.
Greene.....	Dr. W. B. Murphy.	Vance.....	Dr. John Hill Tucker.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. W. McGee, Jr.
Halifax .....	Dr. I. E. Green.	Warren.....	Dr. P. J. Macon.
Harnett.....	Dr. L. J. Arnold.	Washington .....	Dr. W. H. Ward.
Haywood .....	Dr. J. R. McCracken.	Watauga.....	Dr. H. McD. Little.
Henderson .....	Dr. J. G. Waldrop.	Wayne.....	Dr. J. B. Outlaw.
Hertford .....	Dr. C. F. Griffin.	Wilkes.....	Dr. John Q. Myers.
Hyde.....	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell .....	Dr. M. R. Adams.	Yadkin .....	Dr. M. A. Royall.
Jackson.....	Dr. William Self.	Yancey .....	Dr. J. B. Gibbs.
Johnston .....	Dr. Thel Hooks.		



# BULLETIN

OF THE

## NORTH CAROLINA BOARD OF HEALTH

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*Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.*

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GEO. G. THOMAS, M. D., <i>Pres.</i> , Wilmington.	T. E. ANDERSON, M. D.,--Statesville.
S. WESTRAY BATTLE, M. D.,--Asheville.	J. HOWELL WAY, M. D.,--Waynesville.
HENRY W. LEWIS, M. D.,----Jackson.	W. O. SPENCER, M. D.,----Winston-Salem.
W. P. IVEY, M. D. -----Lenoir.	J. L. LUDLOW, C. E. ----Winston-Salem.
RICHARD H. LEWIS, M. D., <i>Secretary and Treasurer</i> , Raleigh.	

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VOL. XXI.

JULY, 1906.

No. 4.

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### NORTH CAROLINA BOARD OF HEALTH—REPORT OF THE SECRETARY, MAY 20, 1905, TO MAY 20, 1906.

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During the past year our State has not suffered from any epidemic of serious nature and our people have enjoyed the health attendant upon normal conditions. It is true that smallpox has continued to prevail in various localities, as was anticipated and predicted, but, as appears from the detailed report given below, it has been less prevalent and even less fatal than usual. Owing to this more pronounced mildness the people and the authorities in some communities have been very neglectful of it.

In this connection it is proper to call attention to two incidents in relation to this disease occurring during the past year—both calling forth an opinion of the Attorney-General.

In the first case the question, raised by the County Attorney of Hyde, was as to the power of the County Sanitary Committee to order compulsory vaccination. The matter was referred to your Secretary by the County Superintendent of Health for settlement. While in my opinion there was not the slightest doubt as to this power, I thought it wisest to have the opinion of our Attorney-General, which would be authoritative. In unequivocal terms he declared the statute conferring this power upon the Sanitary Committee to be valid.

In the second case the question was essentially the same, although the occasion of it was somewhat different. The Sanitary Committee of Washington County, in addition to ordering compulsory vaccination in a certain township infected with smallpox, forbade any teacher to teach, or any pupil to attend school, who could not present a cer-

tificate of vaccination. This order was resisted by the County Superintendent of Public Instruction, and hence the appeal to me by the Superintendent of Health. I immediately took the matter up with the State Superintendent of Public Instruction. To be perfectly sure of his ground, he obtained a ruling from the Attorney-General. This supporting our position, he at once ordered compliance on the part of his subordinate.

One matter of very great and far-reaching importance involving a new question in our State has come up for adjudication since my last report. This is the pollution of streams used for drinking purposes. Section 13 of "An Act to Protect Water Supplies" reads as follows:

"No person, firm, corporation, or municipality shall flow or discharge sewage into any drain, brook, creek, or river from which a public drinking-water supply is taken, unless the same shall have been passed through some well-known system of sewage purification approved by the State Board of Health. Any person, firm, corporation, or the officer of any municipality having this work in charge, who shall violate this section shall be guilty of a misdemeanor, and the continued flow and discharge of such sewage may be enjoined by any person."

The Eno Cotton Mills, at Hillsboro, empties its raw sewage into the Eno River, from which the Durham Water Company obtains a part of its supply, lower down the stream. The Cotton Mills refusing to comply with the requirements of the act, a suit to enjoin them from emptying their raw sewage into the river was brought by the City of Durham. The case was decided in the lower Court in favor of the plaintiff, and the defendant cotton mills appealed to the Supreme Court. The case has been argued and a decision will doubtless be handed down before adjournment—in the next few days. That this decision may certify the validity of the act is greatly to be desired. It is a most important matter in its bearing upon the health of our people. People must have water to drink, and they have a right to demand that it be a safe water. Owing to the geological formation, artesian wells are impossible in a large part of the State and, consequently, the water of streams must be used. It is true also that people must get rid of their excreta, and the most satisfactory way of doing this is by water-carriage through sewers into an adjacent stream. The law does not forbid this, but merely that communities adopting that plan shall, before emptying their sewage into a stream used for drinking purposes by another community below, submit it to such process of purification as may be approved by the State Board of Health. This is a reasonable requirement and one which a due regard for the public health demands. From the present outlook it appears that North Carolina is destined to be a great manufacturing State, and many who now hear me will live to see a factory and its accompanying village, or town, on the banks of nearly every stream within our borders. It is, therefore, extremely important that the question should be settled now—in the beginning, comparatively

speaking, of our industrial life: and consequently we await the decision of our court of last resort with anxious solicitude.\*

Upon request of the authorities, investigations of sewerage problems have been made during the year for the town of Southern Pines and the State Hospital at Morganton, and advice given. The reports will be printed in the next Biennial Report.

Tuberculosis continues, of course, to be our most fatal disease, and its prevention the greatest as well as the most difficult problem we have to consider. Owing to the very small amount of money at our command and the other demands upon that, our efforts are necessarily greatly circumscribed. The policy outlined in my last report—that of appealing directly to the individual by sending him, through the mail, the pamphlet on the "Prevention of Consumption," with an accompanying letter calling attention to it and asking its careful reading—has been pursued during the past year. One hundred thousand copies of this pamphlet were printed and over eighty thousand have been distributed to date. Many letters of acknowledgment and appreciation and asking for additional copies to the number, in some instances, of 500, have been received, and there is no doubt that interest in the subject has been quickened and much good, it is believed, has been done. As it could be done without materially adding to the postage bill, slips on the prevention of typhoid fever and of malarial fevers have been inserted between the leaves of the pamphlet. In this way, at a very trifling cost information in regard to these diseases has been widely disseminated. The most discouraging thing in this campaign of education has been the entire lack of interest and coöperation on the part of our profession. In the very beginning a pamphlet with a letter earnestly appealing to them for their help in this most important work was mailed to, practically, every physician in the State. As they come in contact with nearly every case of tuberculosis in their professional work, it was hoped that they would be glad to supplement their words of instruction to their patients and their families with the pamphlet. But the hope has been unfulfilled, not a half dozen physicians having applied for pamphlets for distribution. In consequence we have received no help from the most powerful and potentially effective agency that could possibly be enlisted in this great work for suffering humanity.

The State Laboratory of Hygiene, while it has done more work than in any preceding year, has not been utilized by the profession to the extent one would have expected. The interest is growing, however, and will doubtless continue to increase. As time will not permit the reading of the report of the Biologist, I will give a few short extracts. The total number of samples examined was 1,096, divided as follows: Public water samples from 47 water-works, 591; private or physician's water samples, 210; pathological samples, 295. Of the last named about one-fourth were diphtheritic exudates, one-half tubercu-

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\*The Supreme Court affirmed the Court below, thus sustaining the "Act to Protect Water Supplies."

losis sputum, and the rest chiefly feces—examined for hook-worm. An interesting statement by the Biologist, who is a reader of the French and German scientific periodicals, is that "The consensus of opinion among working biologists in Europe is that tuberculosis is rarely transmitted directly from cows to humans. This does not mean that there is any radical or specific difference between the germs of human and bovine tuberculosis. It simply means that germs habituated to parasitism on bovines do not easily or at once adapt themselves to the human environment, and, as a consequence, are less virulent and less able to overcome or counteract the natural protective secretions of the human organism."

Smallpox, as stated in the beginning, has been less prevalent and less fatal than usual. A comparison with last year shows the total number of cases to have been 6,049, as against 7,375, and the number of deaths 17—5 white, 12 colored—as against 31, 13 and 18 white and colored respectively, for last year.

The following is a detailed report of smallpox for 1905-1906:

# SMALLPOX REPORT—FROM MAY 1, 1905, TO MAY 1, 1906.

County.	Number of Cases.			Number of Deaths.		
	White.	Colored.	Total.	White.	Colored.	Total.
Alamance	1		1			
Anson	5	44	49			
Beaufort	33	75	113			
Bertie	120	180	300			
Bladen	15	14	29			
Brunswick	5	30	35			
Buncombe	8	2	10			
Burke	1	4	5			
Camden	3	25	28			
Carteret	2	2	4			
Catawba		1	1			
Chatham	4	12	16			
Cherokee	482	4	486			
Chowan	35	77	112		1	1
Clay	5		5			
Cleveland		6	6			
Columbus	56	19	75	2	1	3
Craven		10	10			
Cumberland	285	30	315	2		2
Currituck	37	14	51			
Dare	4	4	8			
Davidson		2	2			
Davie	8		8			
Duplin	5		5			
Durham	5	1	6			
Edgecombe		12	12			
Forsyth	2	2	4			
Franklin		1	1			
Gates	50	150	200			
Granville		1	1			
Greene	3		3			
Guilford	15		15			
Halifax	54	4	58			
Harnett	50		50			
Henderson	11	2	13			
Hertford	25	100	125			
Hyde*	900	1,100	2,000	1	2	3
Lenoir	1		1			

\* Estimated.

## SMALLPOX REPORT—CONTINUED.

County.	Number of Cases.			Number of Deaths.		
	White.	Colored.	Total.	White.	Colored.	Total.
Macon	12		12			
Madison	13		13			
Martin	5	5	10			
Mecklenburg	12	24	36			
Montgomery	2	4	6			
Moore	21	60	81			
Nash	16	33	49			
New Hanover	33	97	130		2	2
Northampton	80	40	120		1	1
Onslow	1		1			
Pamlico	2	6	8			
Pasquotank	28	67	95			
Pender	50	100	150			
Perquimans	150	400	550		2	2
Pitt	1	5	6			
Person		1	1			
Polk	4		4			
Richmond	2	12	14			
Robeson	50		50			
Rockingham	2		2			
Rowan		2	2			
Sampson	3	10	13			
Scotland	3	3	6			
Stanly		2	2			
Union	12	150	162			
Wake	1		1			
Warren	2		2			
Washington	40	120	160		2	2
Wayne	18	180	198		1	1
Total in 67 counties	2,798	3,251	6,049	5	12	17
Death rate, per cent.				.0017	.0036	.0285

## REVIEW OF DISEASES FOR JUNE, 1906.

## SEVENTY-FOUR COUNTIES REPORTING.

Ninety-four counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of June the following diseases have been reported from the counties named:

MEASLES.—Cabarrus, 12 cases; Cleveland, a few; Cumberland; Dare, 3; Davidson; Davie, a few; Durham, 2; Forsyth, a few; Gaston, epidemic; Gates; Graham, 1; Fredell, 6; Johnston, a great many; Onslow; Person; Randolph, 10; Scotland, many; Swain, a few; Union, many; Vance, many; Wake, 2; Yancey, several—22 cases.

WHOOPING-COUGH.—Allegany, 50; Anson, many; Ashe, 40; Beaufort, 1; Brunswick, several; Camden, 10; Columbus, 15; Craven, a

few; Cumberland; Davidson; Durham, 10; Forsyth, a few; Gaston, epidemic; Gates; Graham, 3; Granville, 10; Greene, epidemic; Haywood, 7; Iredell, 10; New Hanover, a great many; Orange, many; Person; Randolph; Robeson, several; Scotland; Vance, a few; Wake, 19; Yancey, a great many—28 counties.

SCARLATINA.—Camden, 1; Carteret, 2; Gaston, 1; Graham, 2.

DIPHTHERIA.—Franklin, 1; Guilford, 1; Haywood, 1; Randolph, 1.

TYPHOID FEVER.—Alleghany, 5; Anson, a few; Ashe, 15; Beaufort, 6; Bertie, 3; Brunswick, 2; Burke, 10; Cabarrus, 12; Caldwell, 23; Camden, 7; Caswell, 10; Catawba, 6; Cleveland, several; Columbus, 7; Craven, 7; Cumberland; Currituck, 2; Dare, 2; Davidson; Davie, a few; Duplin, 3; Durham, 15; Edgecombe, several; Forsyth, a few; Franklin, a few; Gaston, 6; Gates, 2; Graham, 7; Greene, 4; Guilford, 10; Haywood, 4; Iredell, 26; Jackson, 6; Johnston, several; Lincoln, 15; McDowell, 10; Madison, 10; Martin, a few; Mecklenburg; New Hanover, 17; Northampton, 10; Onslow, 1; Pasquotank; Person; Pitt, 12; Randolph, 2; Richmond, several; Robeson, a few; Rowan, a few; Sampson, a few; Scotland, 12; Surry, 5; Swain, 1; Union; Vance, a few; Wake, 32; Yancey, a few—57 counties.

MALARIAL FEVER.—Bertie, several; Brunswick; Camden, in all parts; Caswell, in all parts; Chatham, 1; Currituck, in all parts; Duplin; Edgecombe, in all parts; Gates, 7; Hyde, in all parts; Johnston, in all parts; Northampton, in all parts; Onslow; Rowan, in all parts; Sampson, in all parts; Union, many; Wake, in all parts—17 counties.

BOWEL DISEASES.—Burke, Chatham, Cleveland, Currituck, Dare, Duplin, Gaston, Gates, Graham, Henderson, Jackson, Lincoln, Onslow, Orange, Robeson, Rowan, Surry, Swain, Washington, Yadkin, Yancey—21 counties.

CEREBRO-SPINAL MENINGITIS.—Gaston, 1.

MENINGITIS.—Chatham.

INFLUENZA.—Caswell.

TONSILLITIS.—Currituck.

SMALLPOX.—Anson, a few; Beaufort, several; Bertie, 4; Cabarrus, 1; Camden, 4; Carteret, 2; Craven, 2; Cumberland, 8; Currituck, 8; Duplin, 1; Guilford, 42, all now (July 2) discharged; Hertford, 12; Hyde, 10; Martin, 70; Mecklenburg, 1; New Hanover, 1; Robeson, a few; Scotland, 1; Washington, 2; Wayne, 3—20 counties.

CHOLERA, IN HOGS.—Camden, Caswell, Duplin, Northampton.

DISTEMPER, IN HORSES.—Burke, Madison.

No diseases reported from Buncombe, Macon, Nash, Polk, Rutherford, Transylvania and Wilson.

No reports received from Alamance, Alexander, Bladen, Chatham, Chowan, Clay, Halifax, Harnett, Jones, Lenoir, Mitchell, Montgomery, Moore, Pamlico, Pender, Perquimans, Rockingham, Stanly, Warren, Watauga and Wilkes.



## SUMMARY OF MORTUARY REPORTS FOR JUNE, 1906.

## TWENTY TOWNS.

	<i>White.</i>	<i>Col'd.</i>	<i>Total.</i>
Aggregate population .....	109,850	71,950	181,800
Aggregate deaths .....	151	155	306
Representing temporary annual death-rate per 1,000 .....	16.5	25.8	20.2
<i>Causes of Death.</i>			
Typhoid fever .....	5	6	11
Malarial fever .....	3	1	4
Whooping-cough .....	4	5	9
Pneumonia .....	7	7	14
Consumption .....	11	25	36
Brain diseases .....	12	7	19
Heart diseases .....	13	7	20
Neurotic diseases .....	2	3	5
Diarrhoeal diseases .....	32	33	65
All other diseases .....	59	55	114
Accident .....	3	4	7
Violence .....	0	2	2
	<hr/>	<hr/>	<hr/>
	151	155	306
Deaths under five years .....	55	50	105
Still-born .....	7	8	15

**Mortuary Report for June, 1906.**

TOWNS AND REPORTERS.	POPULA- TION.		TEM- PORARY ANNUAL DEATH- RATE PER 1,000.														TOTAL DEATHS.							
	RACES.	By Races.	Total.	By Races.	Total.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	By Races.	By Towns.	Deaths under five years.
<b>Charlotte</b> .....	W.	18,000	30,000	14.0	15.6	1	1						2	3	3	1	4	5	1		21	89	7	2
Dr. F. O. Hawley.	C.	12,000		18.0		1						1	2	1	1	4	6	2			16		6	1
<b>Durham</b> .....	W.	12,000	18,000	27.0	31.3	1		2				4	4	3		8	5				27	47	11	1
Dr. A. T. Mann.	C.	6,000		40.0				3				4	2	2		7	1				120		9	2
<b>Elizabeth City</b> .....	W.	6,000	10,000	26.0	31.2	1						2				10					13	26	8	
Dr. H. D. Walker.	C.	4,000		36.0		1						1	1			4	6				13		4	1
<b>Fayetteville</b> .....	W.	3,500	6,000	10.3	14.0							1				2					3	7	1	
Dr. A. S. Rose.	C.	2,500		19.2								1				1	2				4	7	3	1
<b>Goldsboro</b> .....	W.	5,000	8,000	16.8	19.5							2		1		2	2				7	13	4	
Robt. A. Creech, H. O.	C.	3,000		24.0								1	1			3					1	6		3
<b>Greensboro</b> .....	W.	10,000	15,000	16.8	21.6							1	1		2	5	5				14	27	6	1
Dr. Edmund Harrison.	C.	5,000		31.2		2						2			1	3	5				13			6
<b>Henderson</b> .....	W.	2,000	4,300	6.0	13.9												1				1	5		
Dr. G. A. Coggeshall.	C.	2,300		20.9								1					3				4			
<b>Lexington</b> .....	W.	3,000	3,600	12.0	10.0												3				3	4	1	
John H. Moyer, Mayor	C.	600		20.0													1				1	1	1	
<b>Marion</b> .....	W.	1,500	1,600	0.0	0.0																0	0		
Dr. B. L. Ashworth.	C.	100		0.0																	0			
<b>Oxford</b> .....	W.	1,400	2,800	8.6	17.1							1									1	4		
Dr. S. D. Booth.	C.	1,400		14.7								2	1								3		1	
<b>Raleigh</b> .....	W.	9,000	16,000	21.3	24.7							1	1	1	1	5	6				16	33	1	
T. P. Sale, Clerk B. H.	C.	7,000		29.1								2	2	1	1	1	8	1			17			
<b>Salem</b> .....	W.	3,400	3,800	14.1	12.6												4				4	4	1	
S. E. Butner, Supt. H.	C.	400		0.0																	0			
<b>Salisbury</b> .....	W.	7,400	11,000	13.0	13.1							1	1			3	1	2			8	12	5	
Dr. H. T. Trantham.	C.	3,600		13.3										1		2	1				4	2		
<b>Southport</b> .....	W.	900	1,400	0.0	0.0																0	0		
Dr. J. A. Doshier.	C.	500		0.0																	0			
<b>Tarboro</b> .....	W.	2,500	3,500	0.0	13.7																0	4		
Dr. S. N. Harrell.	C.	1,000		48.0								1			1	2					4			
<b>Wadesboro</b> .....	W.	1,200	2,000	0.0	12.0																0	2		
Dr. J. H. Bennett.	C.	800		30.0													2				2			
<b>Washington</b> .....	W.	3,500	6,500	17.4	20.3								1			3	1				5	11	3	
Dr. John G. Blount.	C.	3,000		24.0		1										5					6			
<b>Weldon</b> .....	W.	750	1,500	32.0	32.0										1		1				2	4	1	1
J. T. Gooch, Mayor.	C.	750		32.0													2				2			
<b>Wilmington</b> .....	W.	15,000	30,000	16.0	21.6	2	2	2	1	1		1		1		2	9				20	54	5	1
Dr. Charles T. Harper.	C.	15,000		27.2		1	1	1	2	8		2	1	6	11	1					34	13	2	
<b>Wilson</b> .....	W.	3,800	6,800	19.7	17.6								1	1			4				6	10	5	
Dr. W. S. Anderson.	C.	3,000		16.0								1		1			2				4			

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

### County Superintendents of Health.

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Alamance .....	Dr. George W. Long.	Jones.....	
Alexander .....	Dr. O. L. Hollar.	Lenoir .....	Dr. C. L. Pridgen.
Alleghany .....	Dr. B. E. Reeves.	Lincoln .....	Dr. R. W. Petrie.
Anson .....	Dr. J. H. Bennett.	McDowell .....	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon .....	Dr. W. A. Rogers.
Beaufort .....	Dr. John G. Blount.	Madison .....	Dr. W. J. Weaver.
Bertie .....	Dr. H. V. Dunstan.	Martin.....	Dr. W. E. Warren.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick .....	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe .....	Dr. D. E. Sevier.	Montgomery .....	Dr. J. B. Shamburger.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash.....	Dr. J. P. Battle.
Caldwell .....	Dr. C. L. Wilson.	New Hanover .....	Dr. W. D. McMillan.
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret .....	Dr. F. M. Clarke.	Onslow.....	Dr. Cyrus Thompson.
Caswell.....	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba .....	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. J. H. Taylor.	Pasquotank .....	Dr. J. B. Griggs.
Cherokee.....	Dr. J. A. Abernathy.	Pender.....	Dr. R. J. Williams.
Chowan.....	Dr. T. J. Hoskins.	Perquimans.....	Dr. C. C. Winslow.
Clay.....	Dr. J. M. Sullivan.	Person.....	Dr. J. A. Wise.
Cleveland .....	Dr. B. H. Palmer.	Pitt.....	Dr. Joseph E. Nobles.
Columbus.....	Dr. H. B. Maxwell.	Polk.....	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph .....	Dr. A. M. Bulla.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. L. D. McPhail.
Currituck .....	Dr. H. M. Shaw.	Robeson .....	Dr. H. T. Pope.
Dare.....	Dr. W. B. Fearing.	Rockingham .....	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan.....	Dr. J. S. Brown.
Davie.....	Dr. M. D. Kimbrough.	Rutherford.....	Dr. E. B. Harris.
Duplin.....	Dr. A. J. Jones.	Sampson .....	Dr. J. O. Matthews.
Durham .....	Dr. T. A. Mann.	Scotland .....	Dr. A. W. Hamer.
Edgecombe .....	Dr. S. N. Harrell.	Stanly.....	Dr. J. N. Anderson.
Forsyth.....	Dr. S. F. Pfohl.	Stokes.....	
Franklin .....	Dr. R. F. Yarborough.	Surry .....	Dr. John R. Woltz.
Gaston.....	Dr. L. N. Glenn.	Swain.....	Dr. R. L. Davis.
Gates.....	Dr. W. O. P. Lee.	Transylvania .....	Dr. C. W. Hunt.
Graham.....	Dr. M. T. Maxwell.	Tyrrell.....	
Granville .....	Dr. S. D. Booth.	Union .....	Dr. Henry D. Stewart.
Greene.....	Dr. W. B. Murphy.	Vance.....	Dr. John Hill Tucker.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. W. McGee, Jr.
Halifax .....	Dr. I. E. Green.	Warren.....	Dr. P. J. Macon.
Harnett.....	Dr. L. J. Arnold.	Washington .....	Dr. W. H. Ward.
Haywood .....	Dr. J. R. McCracken.	Watauga.....	Dr. H. McD. Little.
Henderson .....	Dr. J. G. Waldrop.	Wayne.....	Dr. J. B. Outlaw.
Hertford .....	Dr. C. F. Griffin.	Wilkes.....	Dr. John Q. Myers.
Hyde.....	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell .....	Dr. M. R. Adams.	Yadkin .....	Dr. M. A. Royall.
Jackson.....	Dr. William Self.	Yancey .....	Dr. J. B. Gibbs.
Johnston .....	Dr. Thel Hooks.		



[You are asked to fill out and mail one of these forms to the Superintendent of Health of your county on or before the third of each month, that he may use it in making his report to the Secretary of the State Board.]

Have any of the following diseases occurred in your practice during the month just closed? If so, state number of cases.

Whooping-cough ----- Typhoid Fever -----

Measles ----- Typhus Fever -----

Diphtheria ----- Yellow Fever -----

Scarlet Fever ----- Cholera -----

Pernicious Malarial Fever ----- Smallpox -----

Hemorrhagic Malarial Fever ----- Cerebro-spinal Meningitis -----

What have been the prevailing diseases in your practice?

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Has any epidemic occurred among domestic animals? If so, what?

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What is the sanitary condition of your section, public and private?

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General Remarks: -----

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----- M. D.

----- 190 ----- N. C.



# BULLETIN

## OF THE

# NORTH CAROLINA BOARD OF HEALTH

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*Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.*

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GEO. G. THOMAS, M. D., <i>Pres.</i> , Wilmington.	T. E. ANDERSON, M. D., Statesville.
S. WESTRAY BATTLE, M. D., Asheville.	J. HOWELL WAY, M. D., Waynesville.
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RICHARD H. LEWIS, M. D., <i>Secretary and Treasurer</i> , Raleigh.	

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VOL. XXI.

AUGUST, 1906.

No. 5.

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### TYPHOID FEVER.

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As is usual at this season of the year, typhoid fever is quite prevalent through the State, its presence being mentioned by 86.5 per cent of the counties reporting for July. It is a preventable disease, and a great many cases could be avoided by proper care: by the prompt and thorough disinfection and burial of the dejecta from the typhoid patients; by the insuring of the purity of the drinking-water and of that used in the dairies; and by the proper care of surface privies, as well as by other less important precautions.

We print below a couple of short papers by the biologist, Dr. McCarthy, and would call the attention of our medical reader especially to the offer to make the laboratory diagnosis of the disease by one of two methods, according to the period of the disease. The paper on typhoid fever and drinking-water is of more general interest, and this we would commend particularly to the editors of our newspapers, with the request that they reprint it, or at least call attention to the dangers of contaminated wells. As our readers know, we have expressed the opinion more than once that public water supplies are as a rule much safer than wells in cities and towns. If practicable, where public supplies exist it would be best to fill up all wells; but the warmth of the water from the mains and the cost of ice would make it a hardship to the poor. At the same time there is no reason why every municipality should not have the water of its wells analyzed from time to time so as to ascertain, and close, those that are polluted.

We also give the conclusions in brief of the report on typhoid fever in our military camps during the Spanish War. There never has

been a more distinguished commission to do similar work, nor an abler or more complete report than this; and although the investigations were confined to soldiers in camp, the same general principles apply to typhoid fever anywhere.

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## LABORATORY METHODS OF DIAGNOSING TYPHOID FEVER.

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By GERALD MCCARTHY, D.Sc., Biologist  
State Laboratory of Hygiene.

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The ordinary routine method of diagnosing the causative germ of typhoid fever is probably the most time-consuming and unsatisfactory known to bacteriologists.

*Bacillus typhosus* belongs to a group of organisms normally found in the intestines of humans and warm-blood animals. The other more important members of this group are *Bacillus coli commune*, the colon bacillus, and *Bacillus cholera suis*, the hog cholera bacillus.

The most rapid, popular, and satisfactory laboratory test for the germ of typhoid fever is the so-called Widal-Johnson test. This is an empirical test which depends upon the observed, but not understood, fact that after nine days from date of infection the blood of a typhoid patient possesses the power of clumping and rendering immotile a vigorously active culture of the typhoid germ. This test is considered reliable in about 90 per cent of cases. It is in very general use in large hospitals. But the Widal test possesses the drawback that fully nine days must elapse from onset of disease before the reaction will occur. There is the further complication that the power of clumping a culture is retained by the blood of a patient for a considerable and indefinite period after convalescence.

The pure culture used in the Widal test must be virulent and vigorously active. It must not be of longer than three months derivation from the spleen of a typhoid corpse. To keep such a culture sufficiently active to be at all reliable, it is necessary that the culture as used shall not have been more than twenty-four hours in same vessel. It must, therefore, be transferred daily to fresh culture tubes or flasks. This entails an enormous amount of work and renders the test impracticable for use of physicians in ordinary practice, and even by laboratories where the demands for the Widal test are few and far between. More recently it has been discovered by a German bacteriologist that a pure and active twenty-four-hour broth culture of the typhoid germ retains its diagnostic value when killed by the addition to the culture of one per cent of commercial formalin or forty per cent formaldehyde. A culture so killed and kept under ordinary laboratory precautions against contamination, retains for several months the power of being clumped by blood from a nine days or older



typhoid case. The technique is similar to that used in the regular Widal test. A drop of blood is taken from the ear-lobe of a patient and allowed to dry upon a clean glass slide or piece of aluminum foil. This when dry can be wrapped up and transmitted to a laboratory by mail if necessary.

In making the test the dried drop of blood is dissolved in two cubic centimeters of distilled water. To one cubic centimeter of the blood solution is added four cubic centimeters of the dead formalized typhosus culture, and the mixture is set aside for one hour. It is then examined under microscope. If no apparent clumping is seen after one hour, a second hour is given. A negative result after second hour is considered conclusive.

In experimental trials of this method upon blood from clinically-improved typhoid cases the dead typhoid culture was found to give positive results in ninety per cent of such cases. This is about as good as the ordinary Widal test, using a living culture.

The dead culture is practicable and satisfactory for physicians' use, and for laboratories not making a specialty of this line of work.

Another method of laboratory diagnosis consists of isolating the germ of typhoid fever from the feces of patients. This method was devised by two Polish biologists—Messrs. Drigalski and Conradi. The typhoid germ may be found in the feces even before any clinical symptoms of the disease appear.

For isolating *Bacillus typhosus* from stools, a special culture medium is used containing chemicals and food materials which favor the multiplication of the typhoid germ, *in vitro*, while at the same time restraining the growth of other intestinal bacteria.

The Drigalski-Conradi method has the advantage over the Widal method, and its later modification, in that the diagnosis can be made without waiting for nine days after infection. The labor involved in the Drigalski-Conradi is large and the process requires laboratory facilities not likely to be possessed by practising physicians.

The North Carolina State Laboratory of Hygiene has hitherto offered to make the regular Widal test for practising physicians of the State. But so few demands have been made for this test that we have for some time felt scarcely justified in expending on it the labor required in keeping up the living typhoid culture. By substituting the formalized culture, however, the Laboratory can accommodate even casual applications. The Laboratory will also, in so far as other demands permit, undertake to diagnose suspected cases of typhoid of less than nine days standing from samples of feces by the Drigalski-Conradi process. Diagnosis from blood samples only will be made for all suspected cases of over nine days standing and from feces only for suspected cases of less than nine days.

Upon application of any practising physician in the State to the Biologist of the State Laboratory in Raleigh, sampling outfits for either blood or feces will be sent. Where the physician is unde-

cided which process to demand, the Biologist will send the outfit he judges best. Both processes will not be applied to same case.

Physicians applying for these outfits must enclose postage, which is three cents for blood samples and four cents for feces samples.

Samples sent to the Laboratory without previous application, or sent in any but the Laboratory sampling outfit, will not be accepted.

No charge is made to physicians for this work.

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## TYPHOID FEVER AND DRINKING-WATER.

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By GERALD MCCARTHY D.Sc., Biologist.

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It is probably a safe estimate to say that if a thorough investigation were made into the source of infection in communities in which typhoid fever is abnormally prevalent, two-thirds of the cases would trace back to feces-polluted drinking-water.

The public water supplies of North Carolina are, with scarcely an exception, of very high quality, and all are safe-guarded by monthly biological and chemical analyses.

As regards the average run of private wells, it may with equal truth be said that the quality of these could hardly be worse. It is obviously out of the question to make frequent analyses of even a small proportion of such wells. No one who is compelled to slake his thirst from such a well can have any real assurance that he is not at the same time taking into his stomach the germ of typhoid fever. But the risk does not end here. People must use milk as well as water, and very frequently the unsuspecting use them in combination, as when the thrifty dairyman dilutes his too thick milk with a little well water. Even where the dairyman scorns such tricks, he probably uses well water to wash his cans and utensils, and in this manner he may unwittingly convey to his customers the disease-producing typhoid germ.

Even when the typhoid germ is absent, feces-polluted water is generally injurious to health. It may and does contain germs which in the human body can give origin to inflammation, catarrhs, and dysenteries.

It is fortunate for the health of rural communities that the source of drinking-water is most often a natural spring rather than a dug well. When situated above one hundred yards from the house and barn, country springs are rarely or never polluted. On the other hand, it is almost invariably the case that the average farm-yard well is polluted by faecal bacteria. The same condemnation must be visited upon town wells. The typical back-yard well is a shallow pit, from fifteen to thirty feet deep. Usually there is no casing and the only

protection from surface contamination is a more or less rickety platform or, as is often the case, merely a square box or top.

In towns, while the wells may be of better construction, the chances are that the soil is more thoroughly permeated with filth. The privies are of necessity close to the wells, and the liability to pollution is proportionately great.

One of the most unfortunate consequences of the private ownership of public water supplies is that all but the well-to-do citizens consider themselves unable to afford the cost of the safe-guarded supply. Thus a town may have—as many towns in North Carolina have—a very pure and excellent water supply, and yet the majority of the citizens will continue to drink from sewage-polluted wells.

So absolutely necessary is pure water, and an abundance of it, to the public health, that municipalities should see that citizens are supplied with pure water even before they are supplied with electric lights, macadamized streets, and similar modern conveniences.

Every town of one hundred or more families should secure a public water supply. For most small towns in North Carolina such a supply can be most cheaply and satisfactorily obtained from an artesian well. The artesian water supplies of North Carolina are generally very pure, though they are as a rule highly mineralized, and very hard.

When a town has once installed a public water supply of good quality, and the water is offered to consumers at the lowest possible price, all private wells within the region traversed by the public water-mains should be condemned and closed up as menaces to the public health.

Already some towns in the State are taking steps in this direction by having made, at the cost of the municipality, analyses from a sufficient number of private wells to determine the general character of these.

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#### REPORT ON TYPHOID FEVER IN UNITED STATES CAMPS IN THE SPANISH WAR OF 1898—GENERAL STATEMENTS AND CONCLUSIONS.

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(1) During the Spanish War of 1898 every regiment constituting the First, Second, Third, Fourth, Fifth, and Seventh Army Corps developed typhoid fever.

(2) More than 90 per cent of the volunteer regiments developed typhoid fever within eight weeks after going into camp.

(3) Typhoid fever developed also in certain regular regiments within three (3) to five (5) weeks after going into camp.

(4) Typhoid fever became epidemic both in the small encampments of not more than one regiment and in the larger ones containing one or more corps.

(5) Typhoid fever became epidemic in the camps located in the Northern as well as in those located in the Southern States.

(6) Typhoid fever is so widely distributed in this country that one or more cases are likely to appear in any regiment within eight weeks after assembly.

(7) Typhoid fever usually appears in military expeditions within eight weeks after assembly.

(8) The miasmatic theory of the origin of typhoid fever is not supported by our investigations.

(9) The pythogenic theory of the origin of typhoid is not supported by our investigations.

(10) Our investigations confirm the doctrine of the specific origin of typhoid fever.

(11) With typhoid fever as widely disseminated as it is in this country, the chances are that if a regiment of 1,300 men should be assembled in any section and kept in a camp the sanitary conditions of which were perfect, one or more cases of typhoid fever would develop.

(12) Typhoid fever is disseminated by the transference of the excretions of an infected individual to the alimentary canals of others.

(13) Typhoid fever is more likely to become epidemic in camps than in civil life, because of the greater difficulty of disposing of the excretions from the human body.

(14) A man infected with typhoid fever may scatter the infection in every latrine in a regiment before the disease is recognized by himself.

(15) Camp pollution was the greatest sin committed by the troops in 1898.

(16) Some commands were unwisely located.

(17) In some instances the space allotted to the regiment was inadequate.

(18) Many commands were allowed to remain on one site too long.

(19) Requests for changes in location made by medical officers were not always granted.

(20) Superior line officers cannot be held blameless for the unsanitary conditions of the camps.

(21) Greater authority should be given medical officers in questions relating to the hygiene of camps.

(22) It may be stated in a general way that the number of cases of typhoid fever varied with the methods of disposing of the excretions.

(23) The tub system of disposing of faecal matter as practised in the Second Division of the Seventh Army Corps is to be condemned.

(24) The regulation pit system is not a satisfactory method of disposing of faecal matter in permanent camps.

(25) In permanent camps where water-carriers cannot be secured, all faecal matter should be disinfected and then carted away from the camp.

(26) Infected water was not an important factor in the spread of typhoid fever in the National encampments in 1898.

(27) To guard against the contamination of the water supply, troops in the field should be provided with means for the sterilization of water.

(28) Flies undoubtedly served as carriers of the infection.

(29) It is more than likely that men transported infected material on their persons or in their clothing, and thus disseminated the disease.

(30) Typhoid fever, as it developed in the regimental organizations, was characterized by a series of company epidemics, each one having more or less perfectly its own individual characteristics.

(31) It is probable that the infection was disseminated to some extent through the air in the form of dust.

(32) A command badly infected with typhoid fever does not lose the infection by simply changing location.

(33) When a command badly infected with typhoid fever changes its location it carries the specific agent of the disease in the bodies of the men, in their clothing, bedding, and tentage.

(34) Even an ocean voyage does not relieve an infected command of its infection.

(35) After a command becomes badly infected with typhoid fever, changes of location, together with thorough disinfection of all clothing, bedding, and tentage, is necessary.

(36) Except in cases of the most urgent military necessity, one command should not be located upon the site recently vacated by another.

(37) The fact that a command expects to change its location does not justify neglect of proper policing of the ground occupied.

(38) It is desirable that the soldier's bed should be raised from the ground.

(39) In some of the encampments the tents were too much crowded.

(40) Medical officers should insist that soldiers remove their outer clothing at night when the exigencies of the situation permit.

(41) Malaria was not a prevalent disease among the troops that remained in the United States.

(42) The continued fever that prevailed among the soldiers in this country in 1898 was typhoid fever.

(43) In addition to the recognized cases of typhoid fever, there were many short or abortive attacks of this disease which were generally diagnosed as some form of malarial fever.

(44) While our examinations show that coincident infection of malaria and typhoid fever may occur, the resulting complex of symptoms are sufficiently well defined and uniform to be recognized as a separate disease.

(45) About one-fifth of the soldiers in the National encampments in the United States in 1898 developed typhoid fever.

(46) Army surgeons correctly diagnosed about one-half the cases of typhoid fever.

(47) The percentage of deaths among cases of typhoid fever was 7.61.

(48) When a command is thoroughly saturated with typhoid fever it is probable that one-fourth to one-third of the men will be found susceptible to the disease.

(49) In military practise typhoid fever is often apparently an intermittent disease.

(50) The belief that errors in diet with consequent gastric and intestinal catarrh induce typhoid fever is not supported by our investigations.

(51) The belief that simple gastro-intestinal disturbances predispose to typhoid fever is not supported by our investigations.

(52) In a considerable per cent (a little more than one-third) of the cases of typhoid fever which are recorded as having been preceded by some internal disturbance, the preceding illness was not so closely followed by typhoid fever that we must regard the former as having occurred within the period of incubation of the latter.

(53) More than ninety per cent of the men who developed typhoid fever had no preceding intestinal disorder.

(54) The deaths from typhoid fever were 86.24 per cent of the total deaths.

(55) The morbidity from typhoid fever per 1,000 of mean strength was a little less than one-fifth (192.65).

(56) The mortality from typhoid fever per 1,000 of mean strength was 14.63.

(57) The average period of incubation in typhoid fever is probably about ten and a half days.

## REVIEW OF DISEASES FOR JULY, 1906.

## SEVENTY-FOUR COUNTIES REPORTING.

Ninety-four counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of July the following diseases have been reported from the counties named:

MEASLES.—Bladen, a few; Caldwell, 4; Cleveland, a few; Craven, 1; Dare, 5; Forsyth, a few; Gaston, many; Haywood, 2; Lincoln, 8; Martin, a few; Yancey, a great many—11 counties.

WHOOPING-COUGH.—Beaufort, 1; Bladen, many; Brunswick, several; Caldwell, 6; Camden, 10; Catawba, 14; Chatham, a few; Cherokee, 2; Cumberland; Davidson; Durham, 1; Forsyth, a few; Franklin, a few; Haywood, 6; Iredell, 3; Johnston, epidemic; Martin, a few; Mecklenburg; Montgomery, 12; Nash; New Hanover, in all parts; Onslow; Person, many; Randolph, 2; Robeson, a few; Rowan, a few; Transylvania, a few; Vance, a few; Wake, 14; Yancey, a great many—30 counties.

SCARLATINA.—Durham, 1; Forsyth, several; New Hanover, 1; Wake, 1—4 counties.

DIPHTHERIA.—Beaufort, 1; Burke, 1; Caswell, 1; Duplin, 2; Edgecombe, 1; Haywood, 1; Onslow; Pitt, 1; Wake, 1; Wilkes, 1.

TYPHOID FEVER.—Alleghany; Anson; Ashe, 25; Beaufort, 6; Bladen, 4; Brunswick, 3; Burke, 12; Cabarrus, 14; Caldwell, several; Camden, 11; Caswell, 2; Catawba, 9; Chatham, 17; Cherokee, 1; Clay, 6; Cleveland, several; Craven, 5; Cumberland; Currituck, a few; Davidson; Davie, a few; Duplin, 6; Durham, 7; Edgecombe, several; Forsyth; Franklin, several; Gaston, 12; Gates, 7; Graham, 15; Guilford, 12; Haywood, 12; Henderson, 8; Hertford, 6; Iredell, 14; Jackson, 8; Johnston, a few; Lincoln, 20; McDowell, 7; Macon, 23; Martin, a few; Mecklenburg; Montgomery, 10; Nash, 3; New Hanover, 14; Northampton, many; Onslow, several; Orange, 3; Pasquotank, several; Person, 2; Pitt; Randolph, 3; Robeson, a few; Rockingham, several; Rowan, several; Sampson, a few; Scotland, 15 to 20; Vance, a few; Wake, 48; Washington, 2; Watauga, 8; Wilkes, 6; Wilson; Yadkin, 7; Yancey, a few—64 counties.

MALARIAL FEVER.—Present in Bertie, Brunswick, Camden, Chatham, Gates, Northampton, and Onslow; in all parts of Currituck, Edgecombe, Hertford, Iredell, Johnston, Lincoln, Rowan, Sampson, and Wake; in many parts of Montgomery—17 counties.

MALARIAL FEVER, PERNICIOUS.—Chatham, 1; Gates, 1; Sampson, a few; Wake, 1—4 counties.

MALARIAL FEVER, HEMORRHAGIC.—Onslow.

BOWEL DISEASES.—Alleghany, Burke, Camden, Currituck, Gates, Henderson, Robeson and Wilkes—8 counties.

CEREBRO-SPINAL MENINGITIS.—Brunswick; Camden; Davidson; Gaston, 1; Mecklenburg; Wake, 3—6 counties.

MUMPS.—Camden, many cases; Gaston, a few.

PNEUMONIA.—Edgecombe, 1; Gaston, 1; Gates, 1; Johnston, a few; Martin, 1; Wake, 1; Yadkin, 1—7 counties.

SMALLPOX.—Ashe, 13; Beaufort, 3; Cabarrus, 5; Craven, 1; Cumberland, 4; Duplin, 4; Hertford, 4; Hyde, 2; Martin, a few; Nash, 3; Pasquotank, 2; Randolph, 7; Washington, 1—13 counties.

CHOLERA, IN CHICKENS.—Davie.

CHOLERA, IN HOGS.—Cherokee, Graham, Jackson, Northampton, and Sampson.

PINK-EYE, IN HORSES.—Washington.

STAGGERS, IN HORSES.—Hyde.

No diseases reported from Buncombe, Carteret, Granville, Polk, Rutherford, and Wayne.

No reports received from Alamance, Alexander, Chowan, Columbus, Greene, Halifax, Harnett, Lenoir, Madison, Mitchell, Moore, Pamlico, Pender, Perquimans, Richmond, Stanly, Swain, and Union.



## SUMMARY OF MORTUARY REPORTS FOR JULY, 1906.

## TWENTY TOWNS.

	<i>White.</i>	<i>Col'd.</i>	<i>Total.</i>
Aggregate population .....	110,750	71,150	181,900
Aggregate deaths .....	141	137	278
Representing temporary annual death-rate per 1,000 .....	15.0	23.1	18.3
<i>Causes of Death.</i>			
Typhoid fever .....	12	8	20
Scarlet fever .....	1	0	1
Whooping-cough .....	1	2	3
Measles .....	1	0	1
Pneumonia .....	0	6	6
Consumption .....	13	19	32
Brain diseases .....	12	4	16
Heart diseases .....	9	8	17
Neurotic diseases .....	1	8	9
Diarrhoeal diseases .....	40	28	68
All other diseases .....	49	48	97
Accident .....	2	5	7
Violence .....	0	1	1
	<hr/>	<hr/>	<hr/>
	141	137	278
Deaths under five years .....	63	58	121
Still-born .....	8	16	24

## Mortuary Report for July, 1906.

TOWNS AND REPORTERS.	RACES.	POPULA- TION.		TEM- PORARY ANNUAL DEATH- RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhoeal Diseases.	All Other Diseases.	Accident. Suicide.	Violence.	TOTAL By Races.	TOTAL By Towns.	DEATHS. Deaths under five years.	Still-born.		
		By Races.	Total.																						By Races.	Total.
<b>Charlotte</b> .....	W.	18,000		7.3		1							2								11	27	3	2		
Dr. F. O. Hawley.	C.	12,000	30,000	16.0	10.8	4							4								16	27	4	5		
<b>Durham</b> .....	W.	12,000		15.0		1							3		1		5	2	1		15	44	18	2		
Dr. T. A. Mann.	C.	6,000	18,000	58.0	29.3	1		1	1				4		1		15	6	1		29	44	18	2		
<b>Elizabeth City</b> .....	W.	6,000		14.0									1	1	2						7	15	3	1		
Dr. H. D. Walker.	C.	4,000	10,000	24.0	18.0	2							1		1		3	1			3	15	5	4		
<b>Fayetteville</b> .....	W.	3,500		10.3									1	1					1		3	5	1			
Dr. A. S. Rose.	C.	2,500	6,000	9.6	10.0								1						1		2	5	1			
<b>Goldsboro</b> .....	W.	5,000		12.0									1				3	1			5	3	2	1		
Robt. A. Creech, H. O.	C.	3,000	8,000	12.0	12.0				1				1						1		3	8	2	1		
<b>Greensboro</b> .....	W.	10,000		19.2									1	3	1		5	6			16	30	10	1		
Dr. Edmund Harrison.	C.	5,000	15,000	33.6	24.0							2	1		1		2	8			14	30	5			
<b>Henderson</b> .....	W.	2,000		12.0															2		2	10	2			
Dr. G. A. Coggeshall.	C.	2,300	4,300	41.7	27.9							1		1					5	1	8	10	4			
<b>Lexington</b> .....	W.	3,000		12.0															3		3	4	1			
John H. Moyer, Mayor	C.	600	3,600	20.0	13.3														1		1					
<b>Marion</b> .....	W.	1,500		24.0									1						2		3	3				
Dr. B. L. Ashworth.	C.	100	1,600	0.0	22.5																0	3				
<b>Oxford</b> .....	W.	1,700		14.1											1		1				2	6	1			
Dr. S. D. Booth.	C.	1,500	3,200	32.0	22.5								2	1	1		1				4	6	2			
<b>Raleigh</b> .....	W.	9,000		24.0		4								5	2		3	3	1		18	30	6	2		
T. P. Sale, Clerk B. H.	C.	7,000	16,000	20.6	22.5	1						2	1		1	1	1	5	1		12	30	7	3		
<b>Salem</b> .....	W.	3,400		12.9			1												3		4					
S. E. Butner, Supt. H.	C.	400	3,800	60.0	18.9							1						1			2	6	3			
<b>Salisbury</b> .....	W.	7,400		16.2									1		1		7	1			10	11	8			
Dr. H. T. Trantham.	C.	3,600	11,000	3.3	12.0												1				1	1				
<b>Southport</b> .....	W.	900		13.3		1													1		1	2				
Dr. J. A. Doshier.	C.	600	1,500	20.0	16.0														1							
<b>Tarboro</b> .....	W.	2,500		9.6																	2	4				
Dr. S. N. Harrell.	C.	1,000	3,500	24.0	13.7										1			1								
<b>Wadesboro</b> .....	W.	1,200		10.0		1										1					1	1				
Dr. J. H. Bennett.	C.	800	2,000	0.0	6.0																0					
<b>Washington</b> .....	W.	3,500		24.0		2								1				4			7	11	1			
Dr. John H. Blount.	C.	3,000	6,500	16.0	20.3								1	1				2			4					
<b>Weldon</b> .....	W.	750		16.7															1		1	2	1			
J. T. Gooch, Mayor.	C.	750	1,500	16.7	16.7														1		1					
<b>Wilmington</b> .....	W.	16,000		17.2		1							1		1		13	7			23	47	16			
Dr. Charles T. Harper.	C.	14,000	30,000	20.6	18.8							1	2		3	6	4	5	2		12	47	7			
<b>Wilson</b> .....	W.	3,800		22.1		1								1	1		2	2			7	12	2			
Dr. W. S. Anderson.	C.	3,000	6,800	20.0	21.2								1				2	2			5	12	2			

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

## County Superintendents of Health.

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Alamance .....	Dr. George W. Long.	Jones.....	
Alexander .....	Dr. O. L. Hollar.	Lenoir .....	Dr. C. L. Pridgen.
Alleghany .....	Dr. B. E. Reeves.	Lincoln .....	Dr. R. W. Petrie.
Anson .....	Dr. J. H. Bennett.	McDowell .....	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon .....	Dr. W. A. Rogers.
Beaufort .....	Dr. John G. Blount.	Madison .....	Dr. W. J. Weaver.
Bertie .....	Dr. H. V. Dunstan.	Martin.....	Dr. W. E. Warren.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick .....	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe .....	Dr. D. E. Sevier.	Montgomery .....	Dr. J. B. Shamburger.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash .....	Dr. J. P. Battle.
Caldwell .....	Dr. C. L. Wilson.	New Hanover .....	Dr. W. D. McMillan.
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret .....	Dr. F. M. Clarke.	Onslow.....	Dr. Cyrus Thompson.
Caswell .....	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba .....	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. J. H. Taylor.	Pasquotank .....	Dr. J. B. Griggs.
Cherokee.....	Dr. J. A. Abernathy.	Pender.....	Dr. R. J. Williams.
Chowan.....	Dr. T. J. Hoskins.	Perquimans.....	Dr. C. C. Winslow.
Clay .....	Dr. J. M. Sullivan.	Person .....	Dr. J. A. Wise.
Cleveland .....	Dr. B. H. Palmer.	Pitt.....	Dr. Joseph E. Nobles.
Columbus.....	Dr. H. B. Maxwell.	Polk.....	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph .....	Dr. A. M. Bulla.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. L. D. McPhail.
Currituck .....	Dr. H. M. Shaw.	Robeson .....	Dr. H. T. Pope.
Dare .....	Dr. W. B. Fearing.	Rockingham .....	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan.....	Dr. J. S. Brown.
Davie .....	Dr. M. D. Kimbrough.	Rutherford.....	Dr. E. B. Harris.
Duplin .....	Dr. A. J. Jones.	Sampson .....	Dr. J. O. Matthews.
Durham .....	Dr. T. A. Mann.	Scotland .....	Dr. A. W. Hamer.
Edgecombe .....	Dr. S. N. Harrell.	Stanly.....	Dr. J. N. Anderson.
Forsyth.....	Dr. S. F. Pfohl.	Stokes .....	
Franklin .....	Dr. R. F. Yarborough.	Surry .....	Dr. John R. Woltz.
Gaston.....	Dr. L. N. Glenn.	Swain.....	Dr. R. L. Davis.
Gates.....	Dr. W. O. P. Lee.	Transylvania .....	Dr. C. W. Hunt.
Graham .....	Dr. M. T. Maxwell.	Tyrrell.....	
Granville .....	Dr. S. D. Booth.	Union .....	Dr. Henry D. Stewart.
Greene.....	Dr. W. B. Murphy.	Vance.....	Dr. John Hill Tucker.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. W. McGee, Jr.
Halifax .....	Dr. I. E. Green.	Warren.....	Dr. P. J. Macon.
Harnett.....	Dr. L. J. Arnold.	Washington .....	Dr. W. H. Ward.
Haywood .....	Dr. J. R. McCracken.	Watauga.....	Dr. H. McD. Little.
Henderson .....	Dr. J. G. Waldrop.	Wayne.....	Dr. J. B. Outlaw.
Hertford .....	Dr. C. F. Griffin.	Wilkes.....	Dr. John Q. Myers.
Hyde .....	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell .....	Dr. M. R. Adams.	Yadkin .....	Dr. M. A. Royall.
Jackson.....	Dr. William Self.	Yancey .....	Dr. J. B. Gibbs.
Johnston .....	Dr. Thel Hooks.		



[You are asked to fill out and mail one of these forms to the Superintendent of Health of your county on or before the third of each month, that he may use it in making his report to the Secretary of the State Board.]

Have any of the following diseases occurred in your practice during the month just closed? If so, state number of cases.

Whooping-cough ----- Typhoid Fever -----

Measles ----- Typhus Fever -----

Diphtheria ----- Yellow Fever -----

Scarlet Fever ----- Cholera -----

Pernicious Malarial Fever ----- Smallpox -----

Hemorrhagic Malarial Fever ----- Cerebro-spinal Meningitis -----

What have been the prevailing diseases in your practice?

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Has any epidemic occurred among domestic animals? If so, what?

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What is the sanitary condition of your section, public and private?

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General Remarks: -----

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----- M. D.

----- 190

----- N. C.

E. M. UZZELL & CO.  
STATE PRINTERS AND BINDERS  
RALEIGH, N. C.

# BULLETIN

## OF THE

# NORTH CAROLINA BOARD OF HEALTH

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*Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.*

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GEO. G. THOMAS, M. D., <i>Pres.</i> , Wilmington.	T. E. ANDERSON, M. D.,--Statesville.
S. WESTRAY BATTLE, M. D.,--Asheville.	J. HOWELL WAY, M. D.,--Waynesville.
HENRY W. LEWIS, M. D.,----Jackson.	W. O. SPENCER, M. D.,--Winston-Salem.
W. P. IVEY, M. D.,-----Lenoir.	J. L. LUDLOW, C. E.,----Winston-Salem.
RICHARD H. LEWIS, M. D., <i>Secretary and Treasurer</i> , Raleigh.	

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VOL. XXI.	SEPTEMBER, 1906.	No. 6.
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### INSTRUCTION AS TO TUBERCULOSIS IN THE PUBLIC SCHOOLS.

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The State Text-book Commission when they adopted, last month, the books to be used in our public schools for the next five years, made the acceptance of the text-book on Physiology and Hygiene conditional upon the insertion therein of a special chapter on Tuberculosis. This was agreed to by the publishers, the J. B. Lippincott Company. The plan proposed by the Buncombe County Medical Society, with whom the suggestion originated, which suggestion was cordially approved and urged upon the commission by this office, was to have the president of that society, Dr. McBrayer of Asheville; Dr. Stevens of the same city, president of the State Association for the Prevention of Tuberculosis, and Dr. Way of Waynesville, representing the State Medical Society, each prepare a tentative chapter and submit them to the Secretary of the State Board of Health for his approval and final editing. It was suggested, however, by the Secretary, that in order to have it written in the same style as the rest of the book—in a style adapted to the pupils—and to save time, which was pressing, the publishers be asked to have it prepared and submit it for approval. This was done, and the proof sent to each of the four gentlemen named. The Secretary of the Board of Health revised and amended it in several particulars, rewriting that portion relating especially to the prevention of the disease, and submitted it to the other three gentlemen for their approval.

So far as we know, this is a step in advance of other States in the instruction of the children on this most important subject. All the text-books on physiology and hygiene consider tuberculosis to a greater or less extent, but it has not been so fully treated nor so emphasized and impressed upon the attention of the children as it is in this instance by having a separate chapter devoted to it. The following is the chapter as adopted:

[From the Second Book of Physiology, by permission of the publishers,  
J. B. Lippincott Co.]

## CHAPTER XIII.

### CONSUMPTION, OR PULMONARY TUBERCULOSIS.

Consumption, or pulmonary tuberculosis, as it is scientifically called, is the most fatal of all diseases, being the cause of about one-seventh of all deaths in the civilized world. Every one should know something about it, for by knowing a few simple facts it is easy to protect yourself from catching it if you come in contact with it, and to protect others if you have the disease yourself. Consumption is contagious, but it is not very much so. It is not contagious in the same way as measles or scarlet fever. In these diseases the germ of the disease floats in the air near the sick persons and if you come in contact with them you are very apt to catch the disease. This is not the case with consumption unless the sick person is very careless in spitting, for the germ of consumption is lodged in the lung and is confined there, except when the patient coughs and spits it up.

**How Caused.**—Consumption is caused by a very small germ called the tubercle bacillus. It is so small that even when you put it on a slide under a microscope and magnify it five hundred times, it looks like a mere tiny beaded thread. If you magnify a little baby five hundred times he would be about as tall as the Washington Monument at the National Capital. So you see how very small the tubercle bacillus is. Isn't it strange that such a small thing should cause such a terrible disease? But it does this because it grows steadily in the lungs and multiplies itself a millionfold. It also produces a poison called toxin, which circulates in the blood. By weakening the normal resistance of the lungs, it also furnishes a fertile soil for other germs which come to join it. These other germs are the cause of colds and coughs and gripes. Then when the disease is advanced, the tubercle bacillus and these other germs give rise to the symptoms of consumption, which are cough, fever, and night-sweats, and great loss of flesh and strength.

**How to Prevent Consumption.**—Now, when you think that this terrible disease can be prevented by a little care on the part of the consumptives, isn't it a pity that they do not all know this and stop the spread of the disease? What must a consumptive do to protect



others from catching the disease? Just one little thing—he must be scrupulously *clean*. The germ of consumption sees the light of day only in what the consumptive spits up.

As long as this spit, or sputum, is moist the germs cannot float into the air to be breathed by some one else. Therefore, the consumptive should in one way or another so care for his sputum that it can never become dry before it is destroyed—best by burning.

When in the house he should be particularly careful never to spit on the floor, or walls, or bedclothes. The best way is to spit directly into the open fire, if there be one, or into a paper box or on a paper handkerchief, or bit of rag, so that it can be burned in the stove before it gets dry. If a spittoon should be used it must have an antiseptic solution, or at least water, in it, to keep the sputum moist until it can be burned or buried. This indoor care is very important, because consumption is nearly always caught in a house infected by the germs from a case that has been careless about his sputum. A house in North Carolina was occupied by a white family of eleven, the father having consumption. He and his wife and eight of the nine children died of it. Later it was occupied by a consumptive colored woman. About three months after her death a family of ten strong, healthy colored persons took possession and every one of them died of consumption.

If a consumptive lives in a city or town, he should never spit on the sidewalk, but into a spit-box, or at least into the gutter. If he lives in the country, he should never spit directly into the path, but on the sides into the bushes or weeds. When a consumptive coughs, sneezes, laughs, or talks loud, if near another person, he should always turn his face away and hold a paper handkerchief, or rag, or even his hand, if he has nothing else, before his mouth. The fine mist, or spray, thrown into the air by these acts contains the germs of the disease.

A consumptive taking these precautions is not dangerous to those who come in contact with him.

**Other Precautions.**—Of course he should sleep alone in a nice airy, sunny room. Sunlight kills germs. He should avoid kissing even his own children or sisters or brothers, because of the tubercle bacilli that may be on his lips. The consumptive, too, may thus catch a cold or an influenza from others, for some colds and other acute inflammations of the nose and throat and air passages are contagious. These are dangerous to the consumptive, because they aggravate his disease. You must always remember that colds are very bad for consumptives and make their condition much worse.

**How Consumption Affects Children.**—Consumption, as you know, affects grown people by attacking the lungs, but it affects children differently. Very few children have consumption of the lungs; in them it attacks the glands. There are little chains of glands running

all through the body. In healthy children they are small and soft, and you cannot feel them, but when they become diseased they become enlarged and hard, and you can feel them, and even see them when they get big enough. The place where they are most easily felt is in the neck and under the lower jaw, and also in the arm-pits. In these places they are most superficial, that is, nearest the surface and just under the skin. When these glands are enlarged you can be sure that the deeper ones in the chest or thorax, and in the abdomen where you cannot feel them, are also enlarged. There are many other things than the tubercle bacillus which enlarge the glands. Any infection or inflammation may do so, so that not every child who has enlarged glands or "kernels" in its neck has tuberculosis. Still, enlarged glands are always suspicious, for healthy children do not have them; and if they are present you should go to a doctor and have him examine your chest and watch you as you grow up. For if the glands are enlarged from the presence of tubercle bacilli in them, there is always danger of the bacilli reaching the lungs when you grow up and giving you consumption. The bacilli reach the lungs by getting into the lymph and blood currents and being deposited in the lungs, where they find everything favorable for their growth and development.

**Present Knowledge of the Disease.**—We know much more now than we did a few years ago about the treatment of consumption. We know now that it can very often be cured or the process stopped. The earlier the disease is discovered and the less inroads it has made in the lungs, the better is the chance of getting well. Therefore it is important that all doctors should examine their patients carefully in order to discover the disease before it has gained much headway, for the moment tubercle bacilli have lodged in the lungs and started to grow, they give rise to symptoms and signs in the chest, which, while very slight at first, can be readily recognized by a skilful doctor. That is what the doctor is for, and that is what he is doing when he listens to your lungs and thumps your chest when he examines you. He can tell by the changes from the normal sound that something is wrong, and just what that is and how far the disease has gone. He can also tell by feeling your neck whether your glands are enlarged, and so be ready, if they are, to prevent the spread of the disease to your lungs.

**Conditions Favoring Consumption.**—Children and grown people who are thin and in poor health, and who have colds and coughs and sore throats, are more likely to take consumption than others. They have not as much strength to resist the disease. Therefore you should keep yourself as well and strong as possible. You should eat well and drink much fresh milk; sleep well and long, and be out-of-doors as much as possible. Exercise is good for you, too, if you do not take too much of it. Everyone should exercise according to his

strength. Deep breathing and chest exercises are good for you, particularly if your chest is narrow and flat, or undeveloped, but they are not good for you if you have consumption of the lungs. You should not get your feet wet and should protect yourself from catching cold. Thorough ventilation of the bed-room is of the greatest importance—the more so in proportion to the number occupying it. Overcrowding is very bad for the health. One or more windows should be kept open day and night. Cold pure air is much more healthful than warm foul air. People who sleep out-doors all the time rarely have colds.

**Treatment.**—After the disease is once contracted the treatment follows along these lines. The important thing is to preserve your strength. So you will have to sleep with your windows open or even out in the fresh air; you will have to take eggs and milk and good meat in order to retain your strength; and you will have to rest and be very quiet, in order that all this good food, fresh air, and sunshine may make you so strong as to be able to throw off the disease. Medicines are of very little use in consumption. They cannot affect the tubercle bacilli, which are too hardy to mind any drugs. That is the reason you must burn them alive when they come up in the spit. However, if you follow out the treatment under a good doctor and your disease is not too far advanced, you will get well. You will never, however, be quite as strong as other people, and you will always have to take care not to catch cold and not to tire yourself too much. The care you will have to take will not prevent you from being useful and happy. You can be in business just like other people, and can, with a little care, live just as long as though you never had the disease.

**Avoid Patent Medicines.**—There is, in this connection, one thing you must shun as you would poison, and that is the patent medicines. There are all kinds of "sure cures" and fake remedies put out by unscrupulous companies. They advertise them to "cure" consumption. None of them are of the slightest value. They are indeed worse than useless, because they delude you with false hopes. By taking them you lose just that much valuable time; they weaken your constitution, and they make the disease in the lungs worse.

**Further Precautions.**—So you see consumption is not such a hopeless disease after all. It is not very contagious, but you must not kiss or be too intimate with people who have consumption, and should avoid living in houses where consumptives have died, certainly before they have been thoroughly scoured and disinfected and have had the walls whitewashed or re-papered. And you must always keep yourself in as fine health as possible. Avoid all excesses, whether in eating or drinking; do not worry or overwork, overexercise, or overstudy, and abstain from the use of tobacco and alcoholic drinks, all of which may so weaken the body that the disease germs

can get firm hold upon you. If you have the disease you must be scrupulously clean, and particularly careful to burn everything you spit up. If you have the disease and are in its early stages, your chances of getting well are very bright, provided you have the proper treatment.

#### QUESTIONS.

1. What can be said of the fatality of Consumption?
2. Why should every one know something about the disease?
3. Is Consumption contagious as are measles and scarlet fever? Explain the difference.
4. What is the origin of the disease?
5. How may the spread of Consumption be prevented?
6. How should the sputum be disposed of?
7. Cite an instance showing how the germs of Consumption linger in dwellings.
8. Name some other precautions against the spread of Consumption.
9. How does Consumption affect children?
10. Name some conditions which favor Consumption and how to offset these conditions.
11. Tell briefly how to treat a consumptive.
12. The effect of Patent Medicines on Consumption.
13. What should be done to the house in which a person has died of Consumption?
14. Is Consumption curable?

## REVIEW OF DISEASES FOR AUGUST, 1906.

## SEVENTY-THREE COUNTIES REPORTING.

Ninety-four counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of August the following diseases have been reported from the counties named:

MEASLES.—Cumberland; Haywood, 10; Surry, 6; Union, a few; Wake, 1; Yancey, a few—6 counties.

WHOOPING-COUGH.—Alamance, several; Brunswick, several; Caldwell, 4; Camden, 6; Catawba, 4; Chatham, a few; Cleveland, a few; Cumberland; Henderson, 5; Iredell, 3; Johnston, several; Montgomery, 15; New Hanover, a few; Orange, several; Person; Randolph; Robeson, a few; Rowan, a few; Scotland, a few; Transylvania, a few; Union, a few; Vance, a few; Wake, 12; Warren, several; Yancey, a few—25 counties.

SCARLATINA.—Caldwell, 1; Durham, 1; Henderson, 1; Randolph, 1; Rowan, 6; Wake, 1—6 counties.

DIPHTHERIA.—Alamance, 1; Cabarrus, 1; Caldwell, 5; Carteret, 2; Catawba, 1; Craven, 1; Cumberland, 4 or 5; Duplin, 18; Edgecombe, 1; Greene, 6; Guilford, 5; Hertford, 2; Johnston, 5; McDowell, 3; New Hanover, 4; Pitt, 5; Randolph, 2; Rowan, 6; Swain, 2; Union, 10; Wake, 5; Warren, 10; Wayne, 1; Wilkes, 3; Yancey, many—25 counties.

TYPHOID FEVER.—Alamance, 22; Alleghany, several; Anson, several; Ashe, 35; Bertie; Bladen, 2; Brunswick, several; Burke, 20; Caldwell, 43; Camden, 3; Catawba, 9; Chatham, 10; Cleveland, several; Craven, 7; Cumberland; Currituck, several; Dare, 6; Davidson, a few; Davie, several; Duplin, 3; Durham, 30; Edgecombe, 2; Gaston, several; Gates, 3; Graham, 6; Granville, 6; Greene, 40; Guilford, 16; Haywood, 16; Henderson, 6; Hertford, 20; Iredell, 3; Jackson, 4; Johnston, several; Lincoln, 15; McDowell, 12; Madison; Martin; Montgomery, 20; Nash, 5; New Hanover, 11; Northampton, many; Orange, 4; Pasquotank, several; Person; Pitt, 12; Randolph, 3; Robeson, a few; Rowan, many; Rutherford, 18; Sampson, a few; Scotland, a few; Surry, 10; Swain, 3; Union, 50; Vance, a few; Wake, 62; Warren, several; Watauga, 2; Wilkes, 8; Wilson; Yadkin, 4; Yancey, a few—63 counties.

MALARIAL FEVER.—Alamance, in all parts; Brunswick; Camden, in all parts; Chatham; Craven; Currituck, in all parts; Dare; Edgecombe, in all parts; Gaston; Gates; Guilford; Hertford, Johnston, Lincoln, in all parts; Montgomery; Nash; Northampton; Rowan, in all parts; Sampson, in many parts; Scotland; Union, in all parts; Washington; Yadkin—23 counties.

MALARIAL FEVER, PERNICIOUS.—Chatham, 1; Currituck, 2; Gates, 1; Guilford, 1; Northampton, several—5 counties.

MALARIAL FEVER, HEMORRHAGIC.—Craven, 2; Nash, 1.

BOWEL DISEASES.—Brunswick, Burke, Camden, Cleveland, Currituck, Gates, Surry—7 counties.

MENINGITIS, CEREBRO-SPINAL.—Ashe, 1; Camden, 1.

MUMPS.—Hertford.

PNEUMONIA.—Ashe, 6; Gaston, 3; Jackson, 2; Robeson, 2—4 counties.

SMALLPOX.—Alamance, 4; Ashe, 5; Cherokee, 1; Cumberland, 1; Hertford, 1—5 counties.

CHOLERA, IN CHICKENS.—Union.

CHOLERA, IN HOGS.—Camden, Currituck, Duplin.

DISTEMPER, IN HORSES.—Burke.

SORE-TONGUE, IN CATTLE AND HORSES.—Ashe, Watauga.

STAGGERS, IN HORSES.—Camden, Currituck, Dare, Washington.

No diseases reported from Buncombe, Forsyth, Polk and Richmond.

No reports received from Alexander, Beaufort, Caswell, Chowan, Clay, Columbus, Franklin, Halifax, Harnett, Hyde, Lenoir, Macon, Mecklenburg, Mitchell, Moore, Onslow, Pamlico, Pender, Perquimans, Rockingham and Stanly.

## SUMMARY OF MORTUARY REPORTS FOR AUGUST, 1906.

## NINETEEN TOWNS.

	<i>White.</i>	<i>Col'd.</i>	<i>Total.</i>
Aggregate population .....	104,050	66,650	170,700
Aggregate deaths .....	130	128	258
Representing temporary annual death-rate per 1,000 .....	15.0	23.0	18.1
<i>Causes of Death.</i>			
Typhoid fever .....	20	11	31
Malarial fever .....	3	9	12
Diphtheria .....	0	1	1
Whooping-cough .....	0	2	2
Pneumonia .....	3	2	5
Consumption .....	12	16	28
Brain diseases .....	8	2	10
Heart diseases .....	10	6	16
Neurotic diseases .....	1	7	8
Diarrheal diseases .....	21	18	39
All other diseases .....	46	51	97
Accident .....	5	2	7
Suicide .....	1	1	2
	<hr/>	<hr/>	<hr/>
	130	128	258
Deaths under five years.....	35	43	78
Still-born .....	8	7	15

## Mortuary Report for August, 1906.

TOWNS AND REPORTERS.	RACES.	POPULA- TION.		TEM- PORARY ANNUAL DEATH- RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhoeal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL		Deaths under five years.	Still-born.
		By Races.	Total.	By Races.	Total.																	By Races.	By Towns.		
Charlotte.....	W.	18,000		12.7		4							1	2	2		4	6				19	34	4	2
Dr. F. O. Hawley.	C.	12,000	30,000	15.0	13.9	3									2	2	2	6				15	64	6	
Durham.....	W.	12,000		20.0		3							4	1			4	7	1			20	30	8	4
Dr. T. A. Mann.	C.	6,000	18,000	20.0	20.0	2							1				3	4				10	30	1	3
Elizabeth City.....	W.	6,000		6.0		1							1				1					3			
Dr. H. D. Walker.	C.	4,000	10,000	30.0	15.6		3	1					1				2	3				10	13	6	
Fayetteville.....	W.	3,500		0.0																		0			
Dr. A. S. Rose.	C.	2,500	6,000	24.0	10.0								2	1		1	1					5	5	1	1
Greensboro.....	W.	10,000		16.8		4	1							2		2	5					14	30	6	
Dr. Edmund Harrison.	C.	5,000	15,000	38.4	24.0	1	1						5	1		1	7					16	4	4	
Henderson.....	W.	2,000		12.0		1											1					2	10	1	1
Dr. G. A. Coggeshall.	C.	2,300	4,300	41.7	27.9								1				1	6				8	3		
Laurinburg.....	W.	900		0.0																		0	0		
F. L. Bundy, Mayor.	C.	600	1,500	0.0	0.0																	0	0		
Marion.....	W.	1,500		32.0		2							1				1					4	4		
Dr. B. L. Ashworth.	C.	100	1,600	0.0	30.0																	0	4		
Oxford.....	W.	1,700		7.0													1					2	3	1	
Dr. S. D. Booth.	C.	1,500	3,200	16.0	11.2	1											1					2	1		
Raleigh.....	W.	9,000		20.0		1							1	1	1		2	9				15	28	3	
T. P. Sale, Clerk B. H.	C.	7,000	16,000	22.3	21.0	1		1						1	1	9						13	10		
Rocky Mount.....	W.	3,500		3.4													1					1	3		
Dr. L. C. Covington.	C.	1,500	5,000	16.0	7.2	1											1					2	3	1	
Salent.....	W.	3,400		10.6														2	1			3	4		
S. E. Butner, Supt. H.	C.	400	3,800	30.0	12.6							1										1			
Salisbury.....	W.	7,400		19.5		2							3			2	3	2				12	14		
Dr. H. T. Trantham.	C.	3,600	11,000	6.7	15.3									1			1					2			
Southport.....	W.	900		13.3										1								1	1		
Dr. J. A. Doshier.	C.	600	1,500	0.0	8.0	0																0			
Tarboro.....	W.	2,500		28.8									1	1	1	1		1				6	9		
Dr. S. N. Harrell.	C.	1,000	3,500	36.0	30.8	1							1						1			3			
Wadesboro.....	W.	1,200		0.0																		0	0		
Dr. J. H. Bennett.	C.	800	2,000	0.0	0.0																	0	0		
Weldon.....	W.	750		0.0																		0	0		
J. T. Gooch, Mayor.	C.	750	1,500	0.0	0.0																	0	0		
Wilmington.....	W.	16,000		20.2		1	2		2	1	4	1	5	10	1							27	62	8	
Dr. Charles T. Harper.	C.	14,000	30,000	30.0	24.8	1	4	1	1	4	2	4	5	12	1							35	11	3	
Wilson.....	W.	3,800		6.3		1							1									2	8		2
Dr. W. S. Anderson.	C.	3,000	6,800	24.0	14.1		1						1			1	1	2				6			

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the whole number of deaths occurring within the corporate limits during the above month."



## County Superintendents of Health.

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Alamance .....	Dr. W. E. Walker.	Jones.....	
Alexander .....	Dr. O. L. Hollar.	Lenoir .....	Dr. C. L. Pridgen.
Alleghany .....	Dr. B. E. Reeves.	Lincoln .....	Dr. R. W. Petrie.
Anson .....	Dr. J. H. Bennett.	McDowell .....	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon .....	Dr. F. L. Siler.
Beaufort .....	Dr. John G. Blount.	Madison .....	Dr. W. J. Weaver.
Bertie .....	Dr. H. V. Dunstan.	Martin.....	Dr. W. E. Warren.
Bladen .....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin
Brunswick .....	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe .....	Dr. D. E. Sevier.	Montgomery .....	Dr. J. B. Shamburger.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod
Cabarrus.....	Dr. R. S. Young.	Nash .....	Dr. J. P. Battle.
Caldwell .....	Dr. C. L. Wilson.	New Hanover.....	Dr. W. D. McMillan
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret .....	Dr. F. M. Clarke.	Onslow.....	Dr. Cyrus Thompson.
Caswell .....	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba .....	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. J. H. Taylor.	Pasquotank .....	Dr. J. B. Griggs.
Cherokee.....	Dr. J. A. Abernathy.	Pender.....	Dr. R. J. Williams
Chowan.....	Dr. T. J. Hoskins.	Perquimans .....	Dr. C. C. Winslow
Clay .....	Dr. M. Sullivan.	Person .....	Dr. J. A. Wise.
Cleveland .....	Dr. B. H. Palmer.	Pitt.....	Dr. Joseph E. Nobles.
Columbus.....	Dr. H. B. Maxwell.	Polk.....	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph .....	Dr. A. M. Bulla.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. L. D. McPhail.
Currituck .....	Dr. H. M. Shaw.	Robeson .....	Dr. H. T. Pope.
Dare .....	Dr. W. B. Fearing.	Rockingham .....	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan.....	Dr. J. S. Brown.
Davie .....	Dr. M. D. Kimbrough.	Rutherford.....	Dr. E. B. Harris.
Duplin .....	Dr. A. J. Jones.	Sampson .....	Dr. J. O. Matthews.
Durham .....	Dr. T. A. Mann.	Scotland .....	Dr. A. W. Hamer.
Edgecombe .....	Dr. S. N. Harrell.	Stanly.....	Dr. J. N. Anderson.
Forsyth.....	Dr. S. F. Pfohl.	Stokes .....	
Franklin .....	Dr. R. F. Yarborough.	Surry .....	Dr. John R. Woltz
Gaston.....	Dr. L. N. Glenn.	Swain.....	Dr. R. L. Davis.
Gates.....	Dr. W. O. P. Lee.	Transylvania .....	Dr. C. W. Hunt.
Graham .....	Dr. M. T. Maxwell.	Tyrrell.....	
Granville .....	Dr. S. D. Booth.	Union .....	Dr. Henry D. Stewart.
Greene.....	Dr. W. B. Murphy.	Vance.....	Dr. John Hill Tucker.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. W. McGee, Jr.
Halifax .....	Dr. I. E. Green.	Warren.....	Dr. P. J. Macon.
Harnett.....	Dr. L. J. Arnold.	Washington .....	Dr. W. H. Ward.
Haywood .....	Dr. J. R. McCracken.	Watauga.....	Dr. H. McD. Little.
Henderson .....	Dr. J. G. Waldrop.	Wayne.....	Dr. J. B. Outlaw.
Hertford .....	Dr. C. F. Griffin.	Wilkes.....	Dr. John Q. Myers.
Hyde .....	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson
Iredell .....	Dr. M. R. Adams.	Yadkin .....	Dr. M. A. Rovall.
Jackson.....	Dr. William Self.	Yancey .....	Dr. J. B. Gibbs.
Johnston .....	Dr. Thel Hooks.		



# BULLETIN

OF THE

## NORTH CAROLINA BOARD OF HEALTH

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*Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.*

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### THE HOME TREATMENT OF PULMONARY TUBERCULOSIS.

BY H. T. FONTAINE, M. D.,

*Physician in Charge at the Pembroke Sanatorium for Tuberculosis.*

(This essay, written in competition for the Pray Prize, offered by the New Hampshire Medical Society for the best original essay on any medical subject, was awarded the prize, consisting of \$100, in May, 1906.)

In these days of tuberculosis crusades, the physician might well ask himself whether he is doing his full duty towards his consumptive patients.

The public is wide-awake on the subject of tuberculosis. That is, it has become somewhat informed, thoroughly frightened, and naturally turns to the physician for advice.

We of the medical profession seem to be only half awake. That is, we make the diagnosis more or less early and we send our well-to-do patients in search of a climate, or, better still, to a sanatorium; then we feel that we can wash our hands of these until they return as convalescents or in a dying condition. Yet the majority of our cases we always have with us; not only the poor, but also the well-to-do who cannot leave home for business or family reasons. In the care of these lies our chief duty, and a more noble work the profession is never called upon to undertake.

How often do we not put off a far from hopeless case with the simple advice to stay out of doors, or to go to the country, drink all the milk

and eggs he can, and be faithful to his medicine bottle. As a rule the patient complies by eating as long as he has an appetite; by taking long walks in the open air, whether he is a fever patient or not, until, tired and exhausted, with quickened pulse and heightened temperature, he has laid the foundation for an acute exacerbation of his trouble. His best chance of recovery has been thrown away. Where does the fault lie? With the patient who has misunderstood his too general instructions, or with the medical adviser who is but half awake: whose advice, though well-intentioned, has been sadly lacking in particulars about the all-important details of daily life? Too often in this malady we make the mistake of attempting to treat the disease rather than the patient.

Before giving the details of home treatment it may be well for us to make an inventory of our usual notions about climate.

#### CLIMATIC VS. HOME TREATMENT.

No curative principle has yet been found in mere climate, nor yet in altitude, and the promiscuous advice to consumptives to change climate has been productive of little good and of a vast amount of harm.

At first sight this would seem to be a radical departure from our old ways of thinking on the subject of treating tuberculosis. But further elucidation will show that it is not. The principles are the same as they were ten years ago, only we have somewhat confused the essentials with the non-essentials of treatment.

Let us for a moment consider in what consists these essentials, these points on which all authorities are agreed, and which form the cardinal principles of the treatment of tuberculosis.

(1) *Fresh Air*.—Not cold or warm air particularly, not dry or damp air, not rarefied air nor medicated nor modified air, but simply pure fresh air, as free as possible from dust, gases or impurities; the God-given air which the lungs were made to bring in contact with the blood at every inspiration.

(2) *Food*.—Not the fancy preparations of albumen, not the vinous solutions of peptones, not the myriads of meat extracts, but the plain, nutritious, easily digestible food to be found on any market.

(3) *Hygiene*.—The removal of the patient from centers of infection; the supervision of his exercise, rest, pleasures and all mental and physical activities; the prescribing of food, baths and proper clothing; the thorough carrying out of the principles of disinfection; the regulation of all his ordinary habits of life, which constitutes a complete change of environment.

(4) *The Symptomatic Treatment* of the frequently supervening complications.

It is a poor section of country, indeed, in which these four essentials of treatment are not obtainable. It certainly does not apply to our Granite State.

Bearing these in mind, what can we reasonably expect from a change of climate? Change of scene, rest from labor, amusement, rest from the

annoyances of the previous environment, a cheerful and optimistic frame of mind.

These so-called advantages of change of climate are in a great measure obtainable at home. Since the patient must give up looking after his business affairs for a long period of time, perhaps years, rest from labor is obtained, and the usual cares and worries attendant upon business life will be thrown off, while his attention is taken up with the details of treatment.

In the few instances where the domestic worries are considerable, the patient had better be removed to the country a few miles from his home, and the visits to and fro be carefully regulated. The complete change in the ordinary habits of life, the regulation of all his actions, the constant attention to the minute details of treatment, will constitute the change of environment, which is so important a factor. The novelty of the situation, the new point of view, will go far towards restoring the cheerful frame of mind we are trying to cultivate.

Thus far we have not considered the disadvantages of removal to another climate, far from home—and they are many.

In the first place is the question of expense. The cost of living is much higher at a health resort than at home, as is also the cost of all ordinary comforts necessary to proper treatment. To obtain good results the patient should be accompanied by a strong-willed nurse or friend to supervise his treatment, and a competent physician should be frequently consulted. If the pennies must be counted, some of the necessities of a consumptive's life will surely be foregone, and the patient needs the best of everything. One could live in comparative luxury at home on what would purchase the bare necessities in a health resort.

When far from home surroundings the patient is liable to develop nostalgia, than which no symptom is more fatal to improvement.

There is much misconception about the claim that a milder climate will facilitate the carrying out of the treatment. As a rule the patient who lacks the moral strength to carry out the details of treatment in his home, will never have the courage to put them into practice by himself, when sent to a Southern or Western State.

Furthermore, by this removal from home restraint, many a young man has been ruined, being obliged to look to the saloon or club-house for his amusement.

At best, climatic treatment must be reserved for the favored few who have ample means.

## HOME TREATMENT.

### GENERAL CONSIDERATIONS.

*Character of the Disease.*—Consumption is not a disease of the lungs merely, but a local expression of a disease which involves the entire system. The lungs are practically beyond the reach of any known remedy.

The object of all treatment is the increase of the physiologic power of the patient to resist disease, and destroy or circumscribe its cause within his own body. It is the systematic effort to increase the nutritive forces of the body.

The treatment of tuberculosis is the same whether carried out at home or abroad, in a sanatorium or in an open resort. The conditions of success are dependent on:

*First.* The character of the patient.

*Second.* The surroundings or facilities for carrying out the treatment. "Where there's a will there's a way," never applied more forcibly than here. Success depends on the relentless attention to details. Of course it is easier in a sanatorium where every one is making efforts in the same direction, but it is only a difference of degree, not of methods.

*Third.* The treatment is to extend over a long period of time, and the patient should be told so, that he may make a business of it, sacrificing all pleasures to it if necessary.

*Fourth.* There is required on the part of the physician a comprehensive understanding of the character of the patient, a knowledge of the nature and extent of his lung lesion, and a full appreciation of the importance of even the minute details of his environment.

The home treatment of tuberculosis fails through lack of proper hygienic control, the indulgence of friends and the want of facilities to meet the conditions.

Let us now take up the four cardinal points or essentials of the treatment of consumption as they should be applied in the home of the patient.

#### OPEN-AIR TREATMENT.

By open-air living we mean being in a center of constantly changing fresh air. We mean taking in, at every inspiration, air which is not vitiated by having been breathed before. We mean that the patient shall stay in this favorable medium from morning till night, and from night till morning.

It is needless to say that an unenclosed piazza, a camp entirely open in front, with opening in its side or back walls, need cause no worry about ventilation. Not so, however, with the glass-enclosed piazza, the ordinary bedroom, or even the commonly used tent with opening in front only.

Fresh air must be real live air, constantly changing and flowing through the room or tent. Of course your patient will complain of the draughts, but how can you get good ventilation without a draught. Besides, what is dangerous in it? It may be harmful to swelter in an over-heated room and then to let a cold blast chill your body. There may be danger in exposing yourself to a cold wind when the body is covered with perspiration from any cause. But common sense will not allow these things to occur. The patient should avoid chilling as well as freezing. An ordinary draught, in ordinary conditions of open-air living, was never known to do anything but good.

So in order to carry out the open-air treatment, the patient must practically take his belongings and move out of doors.

Here come the difficulties. How are they to entertain their friends? Out of doors, of course, or not at all. As for calling on others, it must be given up, unless the call can be made in the open air. But how can one be comfortable out of doors in winter? By being properly dressed and wrapped, and by artificial heating, if necessary.

A favorite method of keeping warm when sitting out of doors is to spread a horse blanket on the reclining chair, letting it extend well beyond the foot. The patient sits squarely in the chair in the center of the blanket. Now one side of the blanket is turned lengthwise over the body, covering it entirely from the waist down; then the other side is folded over all, leaving the patient snugly wrapped, with the blanket projecting over his feet. This projection is turned under by merely raising the feet. Before it is tucked under the feet it may be made to receive a hot soapstone or a hot-water bottle when the patient requires it. Thus protected from the cold, one may spend the entire day in the open air, keenly enjoying zero weather.

When the patient has spacious grounds around his home, it will pay him to construct of pine boards a simple camp or lean-to, entirely open in front, with a back or side opening for free circulation of the air, and to move in furniture enough to enable him to spend his days and nights there in comfort. At one end, a smaller room, entirely inclosed, will serve as a dressing-room and bath-room. As it can be easily heated with a small stove, it will afford all home comforts during cold weather.

A modification of this may be built on a second-story balcony, for the more timid patients, or even on the flat roof of a city house, and be much preferable to a tent or a simple awning.

#### HYGIENIC TREATMENT.

*Rest and Exercise.*—The patient must expend in other ways no more energy than can safely be spared by the forces required to keep his malady in check, and he must take no liberties with health.

The proper treatment of tubercular foci anywhere in the human body consists in immobilization of the parts as far as possible, until all active symptoms have disappeared. This ought to hold good in lung tuberculosis, but the extreme mobility of the lungs makes it impossible. We should not add to the difficulty by countenancing over-exertion in any form.

Since the lungs participate in all excessive activities, the effect produced is an active congestion in the region of the tubercular focus, and often new tears in old adhesions. It is for this reason that one so often observes, in tubercular subjects, hemoptysis, thoracic pain or the unexpected occurrence of pneumo-thorax after any effort whatsoever.

Fatigue causes abundant organic losses and favors mobilization of the bacilli, whence comes a veritable auto-intoxication evidenced by febrile phenomena.

Forced feeding and life in the open air are of the greatest benefit to a tubercular patient when he is placed under conditions of absolute repose. Here we have another reason for nutritive economy.

Indiscriminate prescribing of breathing exercises has done much harm. Deep breathing and stretching of the sick lung is not to be done in active cases. Still, careful deep breathing does much good in most early cases where the symptoms are more or less quiescent.

Pulmonary gymnastics and the demands made by them on the lungs to expand beyond their natural limit, as is done in most methods where the air tension is artificially increased, as by breathing out against resistance, are liable to drive the infectious material into hitherto uninvaded areas of the lungs.

A tubercular patient is not helped to resist disease by muscular development above his normal standard. Regulate the expenditure of bodily energy so that the balance-sheet always shows a credit in favor of anabolism over katabolism.

Gentle exercise, like driving or slow walking, will help the patient in many ways, but it must not be done when the pulse is high or the temperature above 100°.

The best time for this exercise is after breakfast and again after 4 P. M.

The patient should rest a half-hour before his principal meals. For two hours after his midday meal make him rest in his reclining chair or on his bed. This is the time of day when the temperature usually rises to its maximum.

Prescribe nine hours of sleep at night.

Exercise must be prescribed like morphine, by its effects, and it is perhaps the thing the most needful of medical direction.

*Sleeping Quarters.*—The reasons for a southern exposure of the bedroom, camp or piazza on which the patient is to sleep, are many.

In the first place clinical experience has abundantly proven that, other conditions being equal, the patients who sleep in a room which has been exposed all day to the direct rays of the sun improve more quickly than those who sleep in north rooms; and this irrespective of their spending their days in an equal amount of sunshine out of doors.

Sunlight is perhaps our best general disinfectant in tuberculosis, keeping our rooms, bedding, furniture and clothing free from dangerous germs.

Besides, with a southern exposure, one can be easily protected from the strong north and west winds, which should be highly appreciated in cold and stormy weather.

Should the patient not be fortunate enough to have a camp, tent or veranda for sleeping purposes, a room with southern exposure should be chosen. It should be well ventilated, uncarpeted and without curtains or useless ornaments.

The furniture should be simple and only such as is absolutely necessary for ordinary comfort.



Place the head of the bed against an inside wall so as to avoid the direct draughts from the window.

Small washable rugs are allowable, but should be often cleansed. To clean a room, instead of the ordinary methods of dry sweeping, use a mop moistened with one per cent. solution of chlorinated lime, which will at once disinfect and allow no dust to be raised. Remove the dust from furniture with a damp cloth.

Should a little sputum be accidentally dropped on the floor, furniture or clothing, remove the bulk of it with newspaper, which can be burned, then pour a little strong formalin on the infected spots in order to kill the bacilli which may chance to be left. Exposure of the spot to the sun for an hour or so, if possible, will insure thorough disinfection.

*Bathing.*—The patient should take a good warm tub bath once a week, and follow it by cold sponging. Every morning the patient must take a cold sponge bath, beginning by the application of a little cold water to the neck and chest at first, and later sponging the entire body. This should be followed by a brisk rub with a rough towel to insure proper reaction. As long as the patient reacts, the cold bathing does good. When he does not react properly it may do harm.

*Disinfection.*—I usually hand my patients the following printed advice on this subject:

"A consumptive may in the course of twenty-four hours throw off many millions of tubercle bacilli in his expectoration. Unless properly collected and destroyed these may cause infection in other people, or they may even reinfect the consumptive himself. For example, if the patient expectorates in his handkerchief, the secretion may easily be smeared on his clothes and hands, then deposited on his food. But even if he escapes that, the sputum soon dries on the handkerchief, and when the latter is taken out again the germs will be shaken out and distributed in the air, on the floor, on food, etc., and be taken again into the system of the sick one, reproducing the disease perhaps in some other part. If these germs are deposited on food in large numbers they are liable to set up tuberculosis of the stomach or bowels. There is still greater danger of this happening when the patient swallows his own sputum. So he should guard against it.

"The best way to dispose of sputum is to use a paper spitcup, which you can buy at any drug store, and is inexpensive. When the cup is full, throw it in the fire and thus destroy the germs most effectually. When using an ordinary spittoon, have water in it, or, better still, four parts water to one part carbolic acid. This will keep the germs moist until destroyed by the acid.

"When away from home it is well to carry about some Japanese paper napkins in which to expectorate. Throw them in the fire as soon as you return. Never use your pocket handkerchief for this purpose.

"During the act of coughing, drops of sputum or saliva are often expelled, containing tubercle bacilli. To avoid disseminating them, one should hold a handkerchief before the mouth while coughing. On this

account it is well to give directions to have a consumptive's handkerchiefs washed separately, or at least be thoroughly boiled before putting them in with the general laundry.

"The saliva of consumptives contains the bacilli, so they should not be allowed to fasten the cover of a cigar or cigarette with their saliva. Neither should a consumptive be kissed on the mouth.

"Knives, forks, spoons, cups and glasses used by a consumptive should be thoroughly boiled after each use.

"Dress comfortably but not so tightly as to impede deep breathing. Ladies should avoid corsets and multiple heavy skirts hanging from the waist. Let your clothing hang from the shoulders as much as possible. Trailing skirts are an abomination, collecting as they do, dirt, sputum and disease germs of all kinds.

"Tight-fitting shoes are often responsible for cold feet. On rainy days wear rubbers to avoid getting the feet wet.

"Woolen underwear keeps the skin at a more even temperature than cotton."

#### DIETETIC TREATMENT.

Appetite is not necessary. Food does not have to be adjusted to the appetite, but to the patient, and the appetite ignored.

Give food containing high nutritive quality in the most easily digestible form.

The caloric value of food should be borne in mind. Taking an ordinary example: A tumbler of milk equals two eggs, two ounces of raw meat, 16 ounces of oysters, one ounce of cocoa, one ounce of cheese, or two ounces of bread.

Milk stands at the head of the list, and may be taken hot or cold, but should not be boiled. Eggs come next in order, and may be eaten raw, soft boiled, or cooked in any way except fried. Fried foods of all kinds should be forbidden, as well as pastry.

The albuminoids, carbohydrates and fats must be ingested in a certain definite proportion to derive benefit from them. When one of these groups is given preponderance, especially the fats, the weight increases at first, but it soon becomes stationary and rapidly declines, while there is more or less anorexia.

Experiments have shown that fats are particularly well absorbed by consumptives. A suitable diet consists of about 120 grams of proteids, 140 grams of fats and 300 grams of carbohydrates.

Three principal meals a day should be given, consisting of beef, mutton, lamb, chicken and bacon for meats; fresh fish, milk, butter, eggs, vegetables, fruits and light puddings.

Between meals and at bedtime, a lunch of milk or eggs, with crackers or bread and butter, may be prescribed.

Two quarts of milk and four eggs a day, are a fair allowance.

Much good may be obtained from the raw beef diet in selected cases. The raw meat is administered as follows: 1. Finely minced or bruised beef, slightly seasoned with salt, etc., according to taste, served cold or

gently warmed throughout; one-half pound two or three times daily. The meat must be perfectly fresh. 2. Beef-juice is prepared as follows: Extract one-half pound of meat in one-half pint of cold water plus a half teaspoonful of salt, heat slowly to 100 F. Express the liquid through a cloth and serve. Or the juice may be expressed from the meat directly without the addition of water. In either case, the beef-juice must be freshly prepared for use. 3. Raw meat soup is prepared as follows: Mix one-half pint of finely minced fresh meat with sufficient milk to produce a thick, uniform paste. Immediately before serving, add one-half pint of milk at 150 F. In place of milk, the soup may be made in similar fashion with stock of beef, chicken, or veal.

Never allow a heavy meal when the patient is mentally worried or physically exhausted.

#### SYMPTOMATIC TREATMENT.

*Cough.*—Cough should not receive much treatment, as the remedies usually employed are liable to disorder the digestive functions. As the patient's general strength increases and the lesions in the lung heal, the cough gradually disappears.

The patient should be told to control mentally an habitual dry cough. To abort a paroxysm of cough, take several long and deep inspirations followed by forcible expiration. An occasional sip of cold water, chloroform water, lemonade or orange juice will help overcome it.

For the morning cough give a glass of hot water with lemon juice, or a glass of hot milk before the patient gets out of bed. For the distressing night cough that prevents sleep, heroin and codeine are our best remedies. Steam inhalations, alone or with tincture benzoine or creosote, will do much to relieve a cough with scanty expectoration. Counter irritants often do good.

When it arises reflexly from inflammation of the pharynx, larynx or trachea, local treatment is indicated.

*Hemoptysis.*—When the bleeding is scanty, and due merely to capillary oozing, all that is required is rest in the recumbent posture, with 1-6 grain of codeine and a glass of milk given every two hours.

When the bleeding is more profuse, complete rest in bed, with liquid diet, free catharsis, and nitroglycerine or amyl-nitrite, to lower the blood pressure, are indicated. The first thing to do is to relieve the anxiety of the patient by means of  $\frac{1}{4}$  grain of morphia given hypodermically.

Catharsis is especially indicated when the bleeding is due to congestion of the alimentary canal.

The occasional hemoptysis caused by too low a tension of the blood is effectually stopped by administering digitalis.

In hemorrhage of a gushing nature, due to the erosion of a large blood vessel, in addition to morphia and amyl-nitrite or nitroglycerine, it may be necessary to stop the venous return of blood from the extremities. This is done by applying compression bands about the limbs at their junction with the body.

Every effort must be made to help the production of a firm blood clot at the bleeding point. When the patient has lost so much blood that the blood pressure is reduced almost to zero, the condition is conducive to the formation of a firm clot.

There is a natural tendency to the spontaneous checking of a hemorrhage, so our treatment should be tentative, rather than over-active.

A great many remedies have been used for this one complication, and occasionally it is necessary to resort to some one or other of them, so a short discussion of their merits will not be amiss.

We have said that the indication was to favor clotting at the bleeding points; and those remedies must be employed which will lower the blood pressure in the pulmonary artery. Hence the use of nitroglycerine and the nitrites.

Ergot and atropine, though often used, are contra-indicated, because they both produce a distinct rise in blood pressure in the pulmonary artery.

Injections of normal salt solution will also do harm by increasing the blood pressure, and by washing out the clot already formed.

Gelatine is of great value in increasing the coagulability of the blood. The dose should be at least one-half ounce of the dry gelatine. It may be dissolved in warm water, but should not be cooked, as cooking converts it into a different substance.

The spontaneous effort of nature, however, must not be overlooked.

**GASTRO-INTESTINAL SYMPTOMS: Constipation.**—Increase the amount of fruit and green vegetables in the diet; also the amount of fluids and fats. Massage of the abdomen, practiced by the patient before getting out of bed, may afford relief. A. S. B. pills with Caseara Sagrada are good routine remedies.

**Diarrhea.**—Careful regulation of the diet will do as much as anything to control this symptom. When the diarrhea is acute, cleanse the intestinal canal with castor oil, and give appropriate food like cocoa, toast, eggs, rice, mucilaginous soups, scraped meat, mutton broth, etc.

The idiosyncrasies of the patient should be carefully studied. Occasionally one is found who does not digest raw milk. The curds are found in the stools. The simple addition of lime water or boiling water to the milk often relieves this condition, so does the change to boiled milk, or cocoa made with milk. Another may not digest raw eggs, but have no trouble with them if soft boiled.

When the diarrhea is persistent, a change to a liquid and semi-solid diet for a while may be sufficient.

In severe cases give epsom salts, 10 to 15 grains every half hour, or bismuth in large doses.

When diarrhea is due to ulcerations, bismuth and opium, or tannic acid combined with iodoform are useful.

Hot claret with cinnamon will afford temporary relief.

A warm flannel abdominal bandage should be constantly worn.

*Anorexia*.—The bitter tonics are useful in these cases. A mixture of nux vomica, gentian, columbo and cinchona will act better than any single drug.

Some patients will eat in the open air who cannot do so in a dining-room. Aversion to warm meats is remedied by giving cold meats.

*Fever*.—When the temperature is above 101° the patient should have complete rest in bed until it is reduced. Put him on a liquid diet, preferably milk every two hours. The use of the antipyretic drugs is of doubtful value. However, phenacetine and antipyrine are occasionally used.

*Night Sweats*.—Sponge the patient with cold water or alcohol, once or twice every 24 hours, which helps to restore vasomotor tonicity. Sponging with water and vinegar at night, or with formalin and alcohol, equal parts, will often have the desired effect. The wet pack is also useful. Give night lunches when the patient is hungry. The drugs most in use for this symptom are atropine, gr. 1-100—1-50; agaricine pill, gr. 1-12 to gr. 1; camphoric acid, zinc oxide, grs. 2-3, may all be tried.

*Chest Pains*.—When due to pleurisy, limitation of the chest movements on that side by strapping will give relief and promote healing by keeping the parts more at rest. In acute pleurisies, cupping, blistering or the use of the thermo-cautery will relieve pain. For pain due to myalgia, massage the muscles gently once a day. For neuralgia, when severe, use warm applications.

#### MENTAL OR PSYCHICAL TREATMENT.

The mental attitude of the patient is an important factor. Depression calls for optimistic encouragement, sanguine disposition, for coercing restraint.

Tuberculosis patients are largely susceptible to suggestion, and by it you can easily increase the action of any remedy you may see fit to use.

The sooner you establish a bond of sympathy, confidence and control between yourself and your patient, the easier will the treatment become. Meet frivolity with sternness; ignorance by benevolent instruction; foolish conduct by firmness and constancy.

The protracted course of disease taxes the endurance of the most strong-willed patient and requires the sustaining guidance of frequent medical advice to overcome the hardships, trials, temptations and discouragements which are in the path of recovery.

The patient should be guarded against emotions and moral impressions liable to raise the temperature by suggestion.—*Open Air Quarterly*.

## REVIEW OF DISEASES FOR SEPTEMBER, 1906.

## SEVENTY-NINE COUNTIES REPORTING.

Ninety-four counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of September the following diseases have been reported from the counties named:

MEASLES.—Caldwell, 15 cases; Cumberland; Halifax, 20; Haywood, 20; Mecklenburg; Surry, 5; Union. 4—7 counties.

WHOOPING-COUGH.—Alexander, 2; Bladen, a few; Cabarrus, 40; Caldwell, 4; Camden, 3; Catawba, 2; Chatham, a few; Cumberland; Guilford, 2; Halifax, 2; Haywood, 10; Johnston, a few; Martin, several; Mecklenburg; Mitchell, many; Montgomery, 10; New Hanover, a few; Onslow; Person; Sampson, a few; Wake, 20; Warren, several—22 counties.

SCARLATINA.—Alexander, 4; Buncombe, 1; Caldwell, 1; Guilford, 2; Halifax, 2; Iredell, 6; Wayne, 1—7 counties.

DIPHTHERIA.—Alamance, 12; Alexander, 6; Bladen, 25; Cabarrus, 2; Carteret, a few; Caswell, 20; Catawba, 2; Chatham, 4; Craven, 3; Cumberland, 10 or 12; Davie, 2; Duplin, 47; Edgecombe, 2; Green, 6; Guilford, 8; Halifax, 15; Haywood, 3; Hertford, 10; Iredell, 1; Johnston, several; McDowell, 1; Mecklenburg; New Hanover, 3; Northampton, many; Onslow, many; Pender, 3; Pitt, 10; Robeson, 1; Rowan, 8; Rutherford, 6; Sampson, 20; Union, 8; Vance, a few; Wake, 22; Warren, 15; Wilkes, 4; Wilson, many; Yadkin, 1; Yancey, several—38 counties.

TYPHOID FEVER.—Alamance; Alexander, 15; Anson, several; Ashe, 40; Bertie, 1; Brunswick, 1; Burke, 10; Cabarrus, 11; Caldwell, 38; Camden, 3; Caswell, 6; Catawba, 7; Chatham, 6; Cherokee, 22; Cleveland, many; Craven, 9; Cumberland; Currituck, a few; Dare, 4; Davidson; Davie, a few; Duplin, 2; Durham, 3; Edgecombe, several; Forsyth, several; Franklin, several; Gaston, 12; Gates, 1; Graham, 5; Granville, 3; Greene, 12; Halifax, many; Haywood, 15; Henderson, 9; Hertford, 15; Iredell, 5; Lincoln, 24; McDowell, 10; Madison; Martin, several; Mecklenburg; Mitchell, many; Montgomery, 5; Nash, 3; New Hanover, 6; Northampton, a few; Orange, 18; Pasquotank; Pender, a few; Person, 2; Randolph, 3; Richmond, several; Robeson, a few; Rowan, many; Rutherford, 14; Sampson, a few; Scotland, a few; Surry, 4; Union, 20;

Vance, a few; Wake, 22; Warren, 15; Wilkes, 4; Wilson, many; Yadkin, 1; Yancey, several—66 counties.

MALARIAL FEVER.—Alamance; Bertie; Brunswick; Camden, in all parts; Caswell; Chatham; Craven; Cumberland; Currituck, in all parts; Dare; Davie, in nearly all parts; Durham; Edgecombe, in all parts; Forsyth; Gates, 12; Guilford; Hertford; Hyde; Iredell; Johnston, in all parts; Martin; Montgomery; New Hanover, in all parts; Northampton; Pender, many cases; Richmond, in all parts; Scotland; Wake, Warren, Washington, in all parts—29 counties.

MALARIAL FEVER, PERNICIOUS.—Alamance; Camden; Craven, 1; Cumberland, 1; Northampton, 2; Warren—6 counties.

MALARIAL FEVER, HEMORRHAGIC.—Camden, 1; Chatham, 1; Craven, 1; Durham, 1; Forsyth, 1; Martin; Northampton, 1—7 counties.

BOWEL DISEASES.—Cleveland; Currituck; Dare.

INFLUENZA.—Caswell; Montgomery.

MENINGITIS, CEREBRO-SPINAL.—Martin, 1; Nash, 1.

PNEUMONIA.—Alexander, 2; Ashe, 6; Cabarrus, 4; Chatham, 1; Cherokee, 1; Edgecombe, 1; Gaston, 1; Gates, 1; Graham, 1; Henderson, 1; Martin, 1; Montgomery, 3; Nash, 1; Robeson, a few—14 counties.

SMALLPOX.—Alamance, 8; Cherokee, 1; Guilford, 5; Mecklenburg, 1; Randolph, 2.

CHOLERA, IN CHICKENS.—Halifax; Union.

CHOLERA, IN HOGS.—Duplin; Halifax; Northampton.

DISTEMPER, IN HORSES.—Burke; New Hanover.

FOOT AND MOUTH DISEASE, IN CATTLE.—Caswell.

GLANDERS, IN HORSES.—Union, 2.

LIMBERNECK, IN CHICKENS.—Union.

SORE TONGUE, IN HORSES AND CATTLE.—Ashe.

STAGGERS, IN HORSES.—Bertie; Onslow.

TICK-FEVER, IN CATTLE.—Alamance, 1.

No diseases reported from Beaufort, Polk, and Transylvania.

No reports received from Alleghany, Chowan, Clay, Columbus, Harnett, Jackson, Lenoir, Macon, Moore, Pamlico, Rockingham, Stanly, Swain, and Watauga.

## SUMMARY OF MORTUARY REPORTS FOR SEPTEMBER, 1906.

## NINETEEN TOWNS.

	White.	Col'd.	Total.
Aggregate population .....	106,650	69,950	176,600
Aggregate deaths .....	125	138	263
Representing temporary annual death-rate per 1,000 .....	14.1	24.9	17.9
<i>Causes of Death.</i>			
Typhoid fever .....	15	12	27
Malarial fever .....	3	5	8
Diphtheria .....	0	1	1
Whooping-cough .....	1	3	4
Pneumonia .....	3	4	7
Consumption .....	8	8	16
Brain diseases .....	10	11	21
Heart diseases .....	7	8	15
Neurotic diseases .....	4	6	10
Diarrhœal diseases .....	19	17	36
All other diseases .....	51	59	110
Accident .....	3	2	5
Violence .....	1	2	3
	<hr/> 125	<hr/> 138	<hr/> 263
Deaths under five years.....	29	51	80
Still-born .....	7	7	14



**Mortuary Report for September, 1906.**

TOWNS AND REPORTERS.	RACES.	POPULA- TION.		TEM- PORARY ANNUAL DEATH- RATE PER 1,000.															TOTAL DEATHS.						
		By Races.	Total.	By Races.	Total.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	By Races.	By Towns.	Deaths under five years.	Still-born.
<b>Charlotte</b> .....	W.	18,000		8.0		2							1	1	1		6	1				12	26	4	2
Dr. F. O. Hawley.	C.	12,000	30,000	14.0	10.4	2									3		9					14	43	1	
<b>Durham</b> .....	W.	12,000		22.0		3							1	2	1		5	10				23	28	6	1
Dr. T. A. Mann.	C.	6,000	18,000	42.0	28.7	1		1					1	1	2		3	12				21	43	9	1
<b>Elizabeth City</b> .....	W.	6,000		6.0			1															3	12		
Dr. H. D. Walker.	C.	4,000	10,000	27.0	14.4			1					1	2	1	1	3					9	12	3	2
<b>Fayetteville</b> .....	W.	3,500		3.4			1															1	7		
Dr. A. S. Rose.	C.	2,500	6,000	28.8	14.0		1					1	1	1	1	1						6	7	2	
<b>Greensboro</b> .....	W.	10,000		12.0		1						1	2	1	2	1	2					10	21	7	1
Dr. Edmund Harrison.	C.	5,000	15,000	26.4	16.7		1					1	1	2			5	1				11	21	7	1
<b>Henderson</b> .....	W.	2,000		6.0															1			1	9		
Dr. G. A. Coggeshall.	C.	2,300	4,300	39.1	25.1	1		1					1	2		2	1					8	1	3	
<b>Marion</b> .....	W.	1,500		16.0		1									1							2	2		
Dr. B. L. Ashworth.	C.	100	1,600	0.0	15.0																	0	2		
<b>Oxford</b> .....	W.	1,700		7.1		1																	6		
Dr. S. D. Booth.	C.	1,500	3,200	40.0	22.5	1								1			3					5	6		
<b>Raleigh</b> .....	W.	9,000		21.3		1							1	1	1		2	10				16	28	3	1
T. P. Sale, Clerk B. H.	C.	7,000	16,000	20.6	21.0	1										1	2	7				12	28	10	
<b>Rocky Mount</b> .....	W.	3,000		24.0				1					1				2	2				6	9		
Dr. L. C. Covington.	C.	2,000	5,000	13.0	21.6	2		1														3	1		
<b>Salent</b> .....	W.	3,400		10.6		1													2			3	3	1	
S. E. Butner, Supt. H.	C.	400	3,800	0.0	9.5																	0	3		
<b>Salisbury</b> .....	W.	7,400		13.0								1	3		3		1					8	11	3	
Dr. H. T. Trantham.	C.	3,600	11,000	10.0	12.0							1					2					3	11	2	
<b>Southport</b> .....	W.	900		13.3									1									1	2		
Dr. J. A. Doshier.	C.	500	1,400	24.0	17.1																	1	2		
<b>Tarboro</b> .....	W.	2,500		33.6		1								1	1	1	2	1				7	9		1
Dr. S. N. Harrell.	C.	1,000	3,500	24.0	30.8												1	1				2	9		
<b>Wadesboro</b> .....	W.	1,200		20.0												1		1				2	2		
Dr. J. H. Bennett.	C.	800	2,000	0.0	12.0																	0	2		
<b>Washington</b> .....	W.	4,000		21.0		2							1	1			2	1				7	14	2	
Dr. John G. Blount.	C.	3,500	7,500	24.0	22.4	1						1	1		1	3						7	14	2	
<b>Weldon</b> .....	W.	750		0.0																		0	2		1
J. T. Gooch, Mayor.	C.	750	1,500	32.0	16.0									1				1				2	2		
<b>Wilmington</b> .....	W.	16,000		15.0			1					1	2			4	11					120	52	6	1
Dr. Charles T. Harper.	C.	14,000	30,000	27.4	20.8	3	1					1	4	3	1	1	6	10				232	52	11	3
<b>Wilson</b> .....	W.	3,800		9.5		2													1			3	5		
Dr. W. S. Anderson.	C.	3,000	6,800	8.0	8.8		1											1				2	5	1	

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the whole number of deaths occurring within the corporate limits during the above month."

## County Superintendents of Health.

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Alamance .....	Dr. George W. Long.	Jones.....	
Alexander .....	Dr. O. L. Hollar.	Lenoir .....	Dr. C. L. Pridgen.
Alleghany .....	Dr. B. E. Reeves.	Lincoln .....	Dr. R. W. Petrie.
Anson .....	Dr. J. H. Bennett.	McDowell .....	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon .....	Dr. F. L. Siler.
Beaufort .....	Dr. John G. Blount.	Madison .....	Dr. W. J. Weaver.
Bertie .....	Dr. H. V. Dunstan.	Martin.....	Dr. W. E. Warren.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick .....	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe .....	Dr. D. E. Sevier.	Montgomery .....	Dr. J. B. Shamburger.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod
Cabarrus.....	Dr. R. S. Young.	Nash .....	Dr. J. P. Battle.
Caldwell .....	Dr. C. L. Wilson.	New Hanover .....	Dr. W. D. McMillan.
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret .....	Dr. F. M. Clarke.	Onslow.....	Dr. Cyrus Thompson.
Caswell .....	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba .....	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. J. H. Taylor.	Pasquotank .....	Dr. J. B. Griggs.
Cherokee.....	Dr. J. A. Abernathy.	Pender.....	Dr. Robt. H. Bradford.
Chowan.....	Dr. T. J. Hoskins.	Perquimans .....	Dr. C. C. Winslow.
Clay .....	Dr. J. M. Sullivan.	Person .....	Dr. J. A. Wise.
Cleveland .....	Dr. B. H. Palmer.	Pitt.....	Dr. Joseph E. Nobles.
Columbus.....	Dr. H. B. Maxwell.	Polk .....	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph .....	Dr. A. M. Bulla.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. L. D. McPhail.
Currituck .....	Dr. H. M. Shaw.	Robeson .....	Dr. H. T. Pope.
Dare .....	Dr. W. B. Fearing.	Rockingham .....	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan.....	Dr. J. S. Brown.
Davie .....	Dr. M. D. Kimbrough.	Rutherford.....	Dr. E. B. Harris.
Duplin .....	Dr. A. J. Jones.	Sampson .....	Dr. J. O. Matthews.
Durham .....	Dr. T. A. Mann.	Scotland .....	Dr. A. W. Hamer.
Edgecombe .....	Dr. S. N. Harrell.	Stanly.....	Dr. J. N. Anderson.
Forsyth.....	Dr. S. F. Pfohl.	Stokes .....	
Franklin .....	Dr. R. F. Yarborough.	Surry .....	Dr. John R. Woltz.
Gaston.....	Dr. L. N. Glenn.	Swain.....	Dr. R. L. Davis.
Gates.....	Dr. W. O. P. Lee.	Transylvania .....	Dr. C. W. Hunt.
Graham.....	Dr. M. T. Maxwell.	Tyrrell.....	
Granville .....	Dr. S. D. Booth.	Union .....	Dr. Henry D. Stewart.
Greene.....	Dr. W. B. Murphy.	Vance.....	Dr. John Hill Tucker.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. W. McGee, Jr.
Halifax.....	Dr. I. E. Green.	Warren.....	Dr. P. J. Macon.
Harnett.....	Dr. L. J. Arnold.	Washington .....	Dr. W. H. Ward.
Haywood .....	Dr. J. R. McCracken.	Watauga.....	Dr. H. McD. Little.
Henderson.....	Dr. J. G. Waldrop.	Wayne.....	Dr. J. B. Outlaw.
Hertford .....	Dr. C. F. Griffin.	Wilkes.....	Dr. John Q. Myers.
Hyde.....	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell.....	Dr. M. R. Adams.	Yadkin .....	Dr. M. A. Royall.
Jackson.....	Dr. William Self.	Yancey .....	Dr. J. B. Gibbs.
Johnston .....	Dr. Thel Hooks.		

# BULLETIN

## OF THE

# NORTH CAROLINA BOARD OF HEALTH

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*Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.*

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VOL. XXI.

NOVEMBER, 1906.

No. 8.

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### DIPHTHERIA.

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Diphtheria is more than usually prevalent in our State just at this time. It is greatly dreaded by parents, and justly so, for it is one of the most fatal diseases of childhood, and adults are by no means exempt, though less susceptible. Being an infectious disease, it is largely preventable by proper observance of quarantine and disinfection required by law, as well as by a due regard for the safety of others on the part of the attending physician and the head of the infected household. Antitoxin in a small dose is a sure preventive, and, in large doses *promptly* and properly administered, almost a sure cure.

The diagnosis in doubtful cases will be made for any physician free of charge in the State Laboratory of Hygiene. Write direct to the director, Dr. G. McCarthy, Raleigh.

As of special interest and value just at this time, we give below a large part of the Diphtheria Circular issued by the Indiana State Board of Health. The writer, Dr. C. N. Hurty, Secretary, is one of the leading sanitarians of our country:

### INFORMATION ABOUT DIPHTHERIA.

Every case of diphtheria comes from a previous case. If your child is attacked with diphtheria it is because it has taken in the diphtheria germs in some way from a previous case. Sometimes it is impossible to trace the source, but remember, failure to catch a thief does not disprove a theft.

## MILD DIPHTHERIA.

Diphtheria may be so mild as to pass as a "simple cold." We know this to be true because microscopical examinations of children's throats have again and again discovered the germs to be present when the diagnosis was "a little cold," or "a mild tonsillitis."

Many times diphtheria germs have been found in the throats and noses of children when no complaint was made, when there was no fever, and when no sign of illness could be discovered. Why all the symptoms of diphtheria do not appear under such circumstances may be due to the child's resistance (good health), or because the germs themselves are weak. It is found that these germs, when cultivated, produce a poison which will kill guinea-pigs and rabbits. It is further found that if "weak germs" are transferred from one child to another they frequently grow strong and produce unmistakable diphtheria. Before this discovery was made the doctors thought it was necessary for spots or membrane to appear on the tonsils and the walls of the throat before the case could be diphtheria. Only not-up-to-date physicians think so now. Very frequently the mistake is made of diagnosing a case as tonsillitis when it is diphtheria. The fact is, hundreds of cases of diphtheria are called sore throat, tonsillitis, or something else, and all such wrongly diagnosed cases may, and frequently do, spread diphtheria. This is how it happens that people frequently say, "I can't see where my child caught diphtheria, for there have not been any cases around here," while many undiscovered cases were on the streets or in school all the time.

## NOTABLE DIPHTHERIA EPIDEMIC.

In a rural school, held in a one-room school-house in Indiana, diphtheria broke out among the children, and two little girls died. The health officer dismissed the school and disinfected the room and books. In due time the school was opened, and again diphtheria broke out. This time another little girl died. A second time the school was dismissed and disinfection practiced. When convened the third time diphtheria appeared as before, and dismissal and disinfection followed. By this time the patrons and the health officer had about concluded, as dismissal, disinfection and other precautions seemed to be valueless, that therefore the microbe theory was overthrown. Unscientific minds will always extract a large amount of conclusion from a very little fact, while scientific minds require a mountain of fact before they will draw conclusions. Well, after the third closing of the school the State health officer called and took a culture from the throat and nose of each child and also from the teacher's throat and nose. These cultures were taken to the laboratory, placed in an incubator, and the next day the growths were examined under the microscope. Not a single culture from the children contained diphtheria microbes, but the one from the teacher did. She had had a "slight cold" all the time, and sometimes her

throat was a little sore, and she took some lozenges the doctor gave her. She never dreamed she had diphtheria microbes in her throat and nose, yet it was these which caused the symptoms the doctor called "a slight cold." The teacher, although seemingly well, or ailing only slightly, was the source of the three outbreaks. She was placed under quarantine and given treatment until the cultures from her throat and nose showed the diphtheria germs were all gone. Then she was allowed to continue her school, and there was no more diphtheria among the children. The way she spread the germs was by using her spittle to erase figures and bad writing on the slates. This was proved by taking cultures from all the slates and finding germs on two of them. She might also have passed the germs to the children on the edges of the tin drinking cup, for this has happened. The lesson is, *to look with suspicion upon all sore throats*, for they may be caused by diphtheria germs, and to abolish slates and common drinking cups in our schools. Cheap paper pads and pencils may be used instead of slates, and each child should have its own drinking cup.

The germs which cause scarlet fever have never been discovered, but sanitarians know that scarlet fever, like diphtheria, often is so mild as to be regarded as "a slight cold," or "a slight indigestion." They know, also, that it is more than probable that scarlet fever infection is passed around on slates and the edges of common drinking cups.

#### THE SUM-UP.

The sum-up is: Our children not infrequently have diphtheria and we do not know it, and it is the mild cases which most frequently spread the disease. We also learn that it is impossible to always tell a case of diphtheria by even thorough examination in the ordinary way. To know *absolutely*, cultures must be made.

#### HOW TO MAKE CULTURES.

The apparatus necessary is test tubes containing blood serum, sterile swabs, a good microscope, some methyl-blue stain, and an incubating oven. All these make quite a laboratory, and obviously every doctor cannot have them, nor is it practicable for a busy doctor, especially in the country, where long weary trips must be made, to do the work of making cultures and examining them under the microscope. The practical way is to have a public laboratory, and if necessary branch laboratories in various parts of the State, with skilled bacteriologists in charge. Such laboratories would not only be used in fighting diphtheria, but also in fighting typhoid fever, consumption, malaria, cancer and other diseases. Such laboratories would cost money, but they would save much more than they cost. Indeed, just the funeral expenses of those they would save would pay the cost, and the cases of disease prevented would be clear profit, and among the profits we must also include the increased happiness and strength which attend the preventing of disease.

## ABOUT ANTITOXIN.

The best remedy for diphtheria and also the best preventive is antitoxin. Indeed, if it is possible to administer antitoxin before the disease is too far advanced, it is almost a sure cure. It will also prevent a child from taking diphtheria if administered in time. Antitoxin is always administered by injecting it under the skin with a small syringe. All progressive scientific doctors use antitoxin, and parents will do wisely to demand that the doctor administer it immediately if the case is diphtheria, or if the matter is in doubt. Antitoxin is unlike other medicines, for it is *an antidote to a poison* and does no harm although there are no poisons in the child's system to neutralize. In other words, if there is work for it to do it does it grandly, and if there is nothing to do it is harmless and passes out of the system, leaving no effect. The point is not to wait, but administer it early and in sufficient quantity to antidote any diphtheria poison. If administered in five hundred or one thousand unit doses to a well child, that child will be made immune to diphtheria for three months or longer. If diphtheria invades your family always demand that antitoxin be administered to the sick child in doses of two to five thousand units, and repeat as often as necessary. Also demand that it be administered to your children who are not attacked in doses of five hundred to one thousand units to protect them against the disease.

## HOW ANTITOXIN IS PRODUCED.

The first step in producing antitoxin is to plant diphtheria germs in some sterile beef broth and let them grow under the proper conditions. In time they will produce strong diphtheria poison (toxin) in the broth. If this is injected in small amounts into a guinea-pig, rabbit, or any animal, or into a man, they will die. A strong, well and perfectly healthy horse is now selected and a small amount of the poison injected into him. It becomes sick, but unless the poison is in too great amount he recovers, and special care is taken to see that the amount is not sufficient to kill. After recovery from the first sickness, which is true diphtheria, he is given a larger dose and made sick again. This is repeated again and again until no amount of the poison will make him sick. He is then immune, for nature has gradually produced in his blood an antitoxin which neutralizes or antidotes the diphtheria toxin. Sometimes this takes a year. Now about two gallons of the horse's blood is drawn, and the serum which contains the antitoxin is separated. It is this serum, containing the diphtheria antitoxin, that the doctor injects into the circulation of the child attacked with diphtheria. This was all discovered by a German, Dr. Behring, and a Japanese, Dr. Katsiato. They gave the discovery to the world for the good it would do. Inventors always try to make money out of their inventions, which is all right, but physicians who make discoveries would feel disgraced to turn them to pecuniary profit.

## SPECIAL POINTS ABOUT DIPHTHERIA.

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### ITS SANITARY FEATURES—DIRECTIONS FOR ITS PREVENTION AND SUPPRESSION.

Diphtheria is contagious and infectious. *Membranous croup is diphtheria of the larynx*, is the most serious and fatal form of diphtheria, and requires extraordinary care.

Diphtheria may be acquired by direct exposure of the well to those suffering from the disease, and also through clothing and other articles that have come in contact with the sick.

One attack of diphtheria does not afford long protection against subsequent attacks.

Diphtheria poison may remain inactive in a house for a long time and, unless destroyed by disinfectants, may cause a new outbreak at any time.

The spread of diphtheria is favored by faulty ventilation, overcrowding, filthy condition of habitations and persons, damp cellars and general dampness of houses.

Animals may have diphtheria. Common fowls, cats and cows are liable to the disease.

The origin of the seeds of diphtheria, like the origin of corn and wheat, is unknown; but it is known absolutely that every case of the disease proceeds from a previous case.

Diphtheria is more common in the cold months, for then there is less fresh air in the houses, and colds and irritated air passages more generally prevail. Persons who have catarrh, or who are subject to sore throat, or whose health is run down, or who are underfed, are apt to catch diphtheria.

### CONTROL AND SUPPRESSION.

This is accomplished by proper living, isolation of the sick, rigid quarantine of all who have been exposed, thorough disinfection, and the proper use of fresh, reliable diphtheria antitoxin.

When diphtheria prevails, even to a slight degree, in your neighborhood—

Do not go to meetings in crowded places.

Do not permit your children to go to day school, Sunday school, picnics, parties, or entertainments.

Do not permit your children to roam the streets.

*Do not fail to supply good, nourishing food to children and give them plenty of FRESH AIR.*

Do not go into a house where there is a case of diphtheria, and do not come in contact with any person who has entered the house.

Do not eat or drink in the same room with the sick person, if diphtheria is in the house, and do not let any one else use the same cup, plate, glass, spoon, knife or fork used by the sick person until they are thoroughly boiled in water.

Do not expose children to diphtheria in any way. When grown people are obliged to go into the room of a person who has diphtheria they should bathe and change their clothing before they go where children are.

Do not fail to disinfect all stools from a diphtheria patient.

Do not permit children to live in the house where diphtheria exists if it is possible to send them away, and do not fail to have the doctor immunize all exposed children with antitoxin.

Do not permit cats, dogs, canary birds, or other pets, to remain in a room where a person has diphtheria, for animals may easily have the disease and carry it to other houses.

If diphtheria exists in your house, remember you owe an obligation to your neighbor not to inflict the disease upon him. Therefore obey willingly the imposed quarantine. As one attack of diphtheria does not prevent its recurrence, be sure not to spread the disease, lest it return again to plague you.

#### MANAGEMENT OF DIPHTHERIA.

It is very difficult to determine in the beginning whether or not the sickness is diphtheria. It is wise, if diphtheria exists in the neighborhood, to be on the safe side and take it for granted that when any one has sore throat, foul breath, and fever, it is diphtheria. Separate such person from all others except the necessary nurses, and call a physician.

If possible, persons sick with diphtheria should be placed in a large, light, airy room. Remove carpets, curtains, table covers, plush chairs, and all articles which are not needed. Heat with an open fire if it is possible, *and give the patient an abundance of fresh air, night and day.* Let no one enter but the nurses and the doctor.

Clean rags should be used to absorb the discharge from the mouth and nose of the patient and should be immediately burned after use. Keep a quart of strong solution of chlorinated lime in the night vessel. When a patient uses the vessel, immediately empty it and then put into it another quart of the lime solution.

All plates, knives, forks, spoons, and glasses used by the patient must be boiled in water at once.

All clothing, sheets, pillow-cases, towels, blankets, and other cloth articles, should, before they are taken from the room, be put into a pail or tub half filled with a solution of chlorinated lime. Then they must be taken out very soon and boiled for at least twenty minutes.

If the house is small and the patient cannot be isolated, then no member of the family should leave the yard. In tenement-houses or in houses sheltering more than one family, the health officers will give special orders. Supplies can be brought to the gate or door, and in



instances where poverty demands, the township trustees will furnish food.

Physicians should put on a linen duster and skull cap when they enter houses to visit patients sick with diphtheria, scarlet fever, and small-pox. They should carry the duster and cap in a special valise containing a disinfectant which will destroy all disease germs. When leaving the house they should wash hands and face with antiseptic soap and replace cap and duster in the valise. The disinfectant (formaldehyde) in the valise will kill any infection.

A person who has had diphtheria may spread the disease for six to eight weeks from the beginning of the attack. Danger of spreading exists so long as diphtheria germs remain in the throat. The physician should make culture tests to determine this point, and no person, after recovery from an attack of diphtheria, should associate with others, nor go to church or school, or appear on the streets until the throat no longer shows disease germs upon culture. When cultures cannot be made the physician will have to use his best judgment in deciding whether or not the patient may safely go out.

Diphtheria germs have been frequently found in the throats of persons who were quite well, and who were not afterward brought down with the disease. Some people seem not to be susceptible to diphtheria, and the germs, although present, do not grow and cause the disease. A high authority tells of a nurse who carried diphtheria germs in her throat for a long time and introduced the disease into five families. This fact explains in a degree how it is possible for diphtheria to appear when there seems to have been no exposure, and it also teaches us to be very sure that recently recovered patients are free from diphtheria germs before they are allowed again to go out.

All the clothing of the sick person should be disinfected before it is worn again, not neglecting that the patient had on when taken sick.

After recovery or death all articles which have come in contact with the patient, together with the room and all its contents, should be treated as follows:

[DISINFECTED.—Our North Carolina law makes it the duty of the county superintendent of health or the municipal health officer to see that this is done, as it also makes it the duty of the householder and attending physician to notify him immediately of the presence of a case in the family.]

In the country and in small settlements and towns, the good women of the neighborhood always kindly call and offer help when sickness comes to their neighbors' homes. This is to be highly commended, but if the sickness is diphtheria or scarlet fever, they should not enter the house, but should hold a meeting and appoint one, or, if necessary, two, of their number to stay with the afflicted household. The others could do the work of the nurses, and thus prevent the carrying of the infection to other homes. When each woman in the neighborhood takes her turn nursing at the affected home the disease is pretty certain to spread.

## REVIEW OF DISEASES FOR OCTOBER, 1906.

## SEVENTY-SEVEN COUNTIES REPORTING.

Ninety-four counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of October the following diseases have been reported from the counties named:

MEASLES.—Caldwell, 29 cases; Gates; Halifax, epidemic; Haywood, several; Jackson, 3; Rowan, many—6 counties.

WHOOPIING-COUGH.—Alamance: Alexander, 4; Beaufort, 1; Caldwell, 5; Chatham, a few; Durham, 1; Gates; Greene, 1; Halifax, a few; Harnett, several; Haywood, a few; Henderson, a few; Johnston, a few; Lenoir, several; Mitchell, many; New Hanover, a few; Onslow; Randolph 8; Robeson, a few; Vance, a few; Wake, 5; Warren, a few—22 counties.

SCARLATINA.—Alexander, 6; Alleghany, 3; Buncombe, 2; Caldwell, 3; Forsyth, many; Iredell, 2; Lincoln, 1—7 counties.

DIPHTHERIA.—Alamance: Alexander, 4; Alleghany, several; Bladen, 25; Buncombe, 1; Caldwell, 1; Carteret, 1; Chatham, 3; Cleveland, a few; Craven, 22; Cumberland; Currituck, many; Duplin, 40; Edgecombe, 3; Forsyth, many; Franklin, 1; Granville, many; Greene, 12; Guilford, 6; Halifax, 6; Haywood, 1; Henderson, 15; Hertford, 4; Iredell, 1; Jackson, 2; Johnston, several; Lenoir, epidemic; Martin; Mecklenburg; Nash, 2; New Hanover, 13; Northampton, several; Onslow, epidemic; Orange, 1; Pender, 2; Person, 2; Pitt, 12; Randolph, 3; Robeson, 2; Rowan, 3; Rutherford, 5; Swain, 2; Vance, 30 or more; Wake, 8; Warren, 15; Wayne, 1; Yadkin, a few; Yancey, a few—48 counties.

TYPHOID FEVER.—Alamance; Alexander, 3; Beaufort, 2; Burke, 3; Cabarrus, 4; Caldwell, 27; Catawba, 3; Chatham, 8; Cleveland, several; Cumberland; Currituck, 2; Dare, 3; Davidson; Duplin, 3; Durham, 6; Forsyth, a few; Franklin, several; Graham, 2; Greene, 3; Guilford, 8; Harnett, several; Haywood, 8; Henderson, 6; Hertford, 10; Iredell, 3; Jackson, 4; Lenoir, many; Lincoln, 15; Madison, 40 to 60; Martin; Mecklenburg; Mitchell, a few; Montgomery, 3; Nash, 3; New Hanover, 9; Onslow, 1; Orange, 1; Pasquotank, several; Pender, 1; Randolph, 2; Robeson, a few; Rowan, a few; Rutherford, 10; Scotland, a few; Swain,

2; Union, a few; Vance, a few; Wake, 6; Warren, several; Washington, 1; Watanga, 8; Wilson, many; Yancey, several—53 counties.

MALARIAL FEVER.—Alexander; Bertie, a few; Brunswick; Camden, in all parts; Carteret; Chowan; Currituck; Dare, in all parts; Edgecombe, in all parts; Franklin; Gates; Greene, 3; Halifax; Hertford, in all parts; Hyde; Lincoln; Martin; Montgomery, in many parts; New Hanover; Northampton; Pender, many; Rowan, many, but less than before; Union; Warren; Washington, in all parts—25 counties.

MALARIAL FEVER, PERNICIOUS.—Alexander, 2; Gates, 1; New Hanover, 1; Northampton, 2.

MALARIAL FEVER, HEMORRHAGIC.—Camden, 2; Franklin, 3; Halifax, 1; Hyde, 3; Martin; Northampton, 3; Onslow, 4—7 counties.

INFLUENZA.—Alamance; Lincoln; Randolph.

PNEUMONIA.—Alamance; Alexander, 10; Alleghany; Cabarrus, 2; Cumberland; Currituck, 2; Durham, 4; Franklin, several; Graham, 1; Halifax, a few; Lincoln, 5; Martin; Mitchell; Nash, 6; Onslow, 1; Randolph, 1; Robeson, a few—17 counties.

MUMPS.—Lincoln, many; Union, many.

TONSILLITIS.—Brunswick; Gates, many; Person, a few.

SMALLPOX.—Alamance, 8; Bladen, 4; Randolph, 17.

CHOLERA, IN CHICKENS.—Gates, Union.

CHOLERA, IN HOGS.—Camden, Gates, Graham, Northampton.

DISTEMPER, IN HORSES.—Burke.

No diseases reported from Anson, Cherokee, Gaston, Davie, McDowell, Polk, Richmond, and Surry.

No reports received from Ashe, Caswell, Clay, Columbus, Macon, Moore, Pamlico, Perquimans, Rockingham, Sampson, Stanly, and Wilkes.

## SUMMARY OF MORTUARY REPORTS FOR OCTOBER, 1906.

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 TWENTY-ONE TOWNS.
 

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	<i>White.</i>	<i>Col'd.</i>	<i>Total.</i>
Aggregate population .....	111,050	72,850	183,900
Aggregate deaths.....	133	141	274
Representing temporary annual death-rate per 1,000 .....	14.4	23.2	17.9
<i>Causes of Death.</i>			
Typhoid fever .....	11	8	19
Malarial fever .....	3	10	13
Diphtheria .....	5	0	5
Whooping-cough .....	1	0	1
Pneumonia .....	5	6	11
Consumption .....	11	21	32
Brain diseases .....	5	5	10
Heart diseases .....	14	12	26
Neurotic diseases.....	1	3	4
Diarrhœal diseases .....	19	11	30
All other diseases .....	57	59	116
Accident .....	0	6	6
Suicide .....	1	0	1
	<hr/>	<hr/>	<hr/>
	133	141	274
Deaths under five years.....	47	40	87
Still-born .....	6	16	22

## Mortuary Report for October, 1906.

TOWNS AND REPORTERS.	RACES.	POPULA- TION.		TEM- PORARY ANNUAL DEATH- RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrhoal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL By Races.	TOTAL By Towns.	DEATHS. Deaths under five years. Stillborn.
		By Races.	Total.	By Races.	Total.																			
Charlotte .....	W.	18,000	30,000	6.7	10.0																	10	25	3
Dr. F. O. Hawley.	C.	12,000		15.0		1	2						3		2	1		6					15	3
Durham .....	W.	12,000	18,000	6.0	24.0	2						3	1	1	1	1	7					16	36	5
Dr. T. A. Mann.	C.	6,000		40.0		1						1	6		2		1	9					20	36
Edenton .....	W.	1,500	4,000	16.0	18.0																	2	6	1
Dr. Thomas J. Hoskins	C.	2,500		19.2														4					4	6
Elizabeth City .....	W.	6,000	10,000	8.0	19.2			1							1		2					4	12	2
Dr. H. D. Walker.	C.	4,000		36.0				1				4	1		5								12	16
Fayetteville .....	W.	3,500	6,000	37.7	28.0	1		1				1	2	1	2	1	3		1			11	3	4
Dr. A. S. Rose.	C.	2,500		14.4									1	1						1				3
Greensboro .....	W.	10,000	15,000	9.6	14.0	1	1					1	4			1						8	13	2
Dr. Edmund Harrison.	C.	5,000		12.0				1								2		2						5
Henderson .....	W.	2,000	4,300	30.0	27.9	1									2	1	1					5	10	1
Dr. G. A. Coggeshall.	C.	2,300		26.1				1						1					2	1				5
Lexington .....	W.	3,000	3,600	10.0	13.3	1												2				3	4	1
J. H. Moyer, Mayor.	C.	600		22.0											1									1
Marion .....	W.	1,500	1,600	8.0	7.5				1													1	1	
Dr. B. L. Ashworth.	C.	100		0.0																				0
Oxford .....	W.	1,600	3,100	0.0	0.0																	0	0	
Dr. S. D. Booth.	C.	1,500		0.0																				0
Raleigh .....	W.	9,000	16,000	18.7	21.0	1							1	1		4	7					14	28	5
T. P. Sale, Clerk B. H.	C.	7,000		24.0				1						2	3	1			5	2				14
Rocky Mount .....	W.	3,000	4,800	4.0	7.5		1	1									1					2	3	2
Dr. L. C. Covington.	C.	1,800		13.3																				0
Salem .....	W.	3,400	3,800	10.6	9.5				1									2				3	3	3
S. E. Butner, Supt. H.	C.	400		0.0																				0
Salisbury .....	W.	7,400	11,000	6.5	13.1								1				2	1				4	12	2
Dr. H. T. Trantham.	C.	3,600		26.7				1							2	1		4						8
Southport .....	W.	900	1,400	26.7	17.1										1		1					2	2	1
Dr. J. A. Doshier.	C.	500		0.0																				0
Tarboro .....	W.	2,500	3,500	9.6	6.8													1	1			2	2	
Dr. S. N. Harrell.	C.	1,000		0.0																				0
Wadesboro .....	W.	1,200	2,000	10.0	12.0											1						1	2	
Dr. J. H. Bennett.	C.	800		15.0														1						1
Washington .....	W.	4,000	7,500	21.0	20.8	1	1							1		1	3					7	13	3
Dr. John G. Blount.	C.	3,500		20.6				1	1							1		3						6
Weldon .....	W.	750	1,500	80.0	56.0	1												4				5	7	1
J. T. Gooch, Mayor.	C.	750		32.0															2					2
Wilmington .....	W.	16,000	30,000	17.2	22.0		1	1	1				3		2	1	4	10				23	55	11
Dr. Charles T. Harper.	C.	14,000		27.4					3					1	1	1	4	2	6	12	2			32
Wilson .....	W.	3,800	6,800	34.7	38.8	2							1		1			7				11	22	4
Dr. W. S. Anderson.	C.	3,000		44.0					2										4	5				11

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

### County Superintendents of Health.

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Alamance .....	Dr. George W. Long.	Jones.....	
Alexander .....	Dr. O. L. Hollar.	Lenoir .....	Dr. C. L. Pridgen.
Alleghany .....	Dr. B. E. Reeves.	Lincoln .....	Dr. R. W. Petrie.
Anson .....	Dr. J. H. Bennett.	McDowell .....	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon .....	Dr. F. L. Siler.
Beaufort .....	Dr. John G. Blount.	Madison .....	Dr. W. J. Weaver.
Bertie .....	Dr. H. V. Dunstan.	Martin.....	Dr. W. E. Warren.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick .....	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe .....	Dr. D. E. Sevier.	Montgomery .....	Dr. J. B. Shamburger.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash .....	Dr. J. P. Battle.
Caldwell .....	Dr. C. L. Wilson.	New Hanover .....	Dr. W. D. McMillan.
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret .....	Dr. F. M. Clarke.	Onslow.....	Dr. Cyrus Thompson.
Caswell .....	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba .....	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. J. H. Taylor.	Pasquotank .....	Dr. J. B. Griggs.
Cherokee.....	Dr. J. A. Abernathy.	Pender.....	Dr. Robt. H. Bradford.
Chowan.....	Dr. T. J. Hoskins.	Perquimans .....	Dr. C. C. Winslow.
Clay .....	Dr. J. M. Sullivan.	Person .....	Dr. J. A. Wise.
Cleveland .....	Dr. B. H. Palmer.	Pitt.....	Dr. Joseph E. Nobles.
Columbus.....	Dr. H. B. Maxwell.	Polk .....	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph .....	Dr. A. M. Bulla.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. L. D. McPhail.
Currituck .....	Dr. H. M. Shaw.	Robeson .....	Dr. H. T. Pope.
Dare .....	Dr. W. B. Fearing.	Rockingham .....	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan.....	Dr. I. H. Foust.
Davie .....	Dr. M. D. Kimbrough.	Rutherford.....	Dr. E. B. Harris.
Duplin .....	Dr. A. J. Jones.	Sampson .....	Dr. J. O. Matthews.
Durham .....	Dr. T. A. Mann.	Scotland .....	Dr. A. W. Hamer.
Edgecombe .....	Dr. S. N. Harrell.	Stanly.....	Dr. J. N. Anderson.
Forsyth.....	Dr. S. F. Pfohl.	Stokes .....	
Franklin .....	Dr. R. F. Yarborough.	Surry .....	Dr. John R. Woltz.
Gaston.....	Dr. L. N. Glenn.	Swain.....	Dr. R. L. Davis.
Gates.....	Dr. W. O. P. Lee.	Transylvania .....	Dr. C. W. Hunt.
Graham.....	Dr. M. T. Maxwell.	Tyrrell.....	
Granville .....	Dr. S. D. Booth.	Union .....	Dr. Henry D. Stewart.
Greene.....	Dr. W. B. Murphy.	Vance.....	Dr. John Hill Tucker.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. W. McGee, Jr.
Halifax .....	Dr. I. E. Green.	Warren.....	Dr. P. J. Macon.
Harnett.....	Dr. L. J. Arnold.	Washington .....	Dr. W. H. Ward.
Haywood .....	Dr. J. R. McCracken.	Watauga.....	Dr. H. McD. Little.
Henderson.....	Dr. J. G. Waldrop.	Wayne.....	Dr. J. B. Outlaw.
Hertford .....	Dr. C. F. Griffin.	Wilkes.....	Dr. John Q. Myers.
Hyde.....	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell .....	Dr. M. R. Adams.	Yadkin .....	Dr. M. A. Rovall.
Jackson.....	Dr. William Self.	Yancey .....	Dr. J. B. Gibbs.
Johnston .....	Dr. Thel Hooks.		

# BULLETIN

## OF THE

# NORTH CAROLINA BOARD OF HEALTH

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*Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.*

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GEO. G. THOMAS, M. D., <i>Pres.</i> , Wilmington.	T. E. ANDERSON, M. D., Statesville.
S. WESTRAY BATTLE, M. D., Asheville.	J. HOWELL WAY, M. D., Waynesville.
HENRY W. LEWIS, M. D., Jackson.	W. O. SPENCER, M. D., Winston-Salem.
W. P. IVEY, M. D., Lenoir.	J. L. LUBLOW, C. E., Winston-Salem.

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RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

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VOL. XXI.

DECEMBER, 1906.

No. 9.

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### MEETING OF THE AMERICAN PUBLIC HEALTH ASSOCIATION.

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The American Public Health Association is an international society composed of representatives from the four leading countries of North America—the United States, the Dominion of Canada, and the republics of Mexico and Cuba. It is the leading organization for the promotion of the public health in the western hemisphere and has quite a large membership. While the most active members, as would naturally be the case, are the delegates sent by the various State, provincial, and municipal boards of health of the different countries, as well as by the Public Health and Marine Hospital Service, the Army and Navy of our own country, a large proportion are laymen—patriotic, public-spirited citizens having at heart the promotion of the object set forth in the title of the Association.

The thirty-fourth annual meeting was held in the City of Mexico, December 3-7, inclusive. Owing to the great distance, the number of English-speaking delegates, while not very large, was quite creditable under the circumstances. The proportion of Mexican members was naturally quite large; but it should be said to their honor that the attendance from that country at all meetings is excellent.

Most of the delegates from Canada and the United States went in a special train made up at Chicago and conducted under the management of Mr. Gates, who makes a business of such tours. From the time we crossed the Rio Grande every courtesy was extended to us, and before reaching the City of Mexico special attentions were shown us by the

authorities of the cities of Zacatecas, Guanajuato, and Vera Cruz. The last named, while out of the way, was visited at the special request of the central health authorities of the republic, that we might see and examine the splendid work for sanitation being done there.

Upon our arrival at the City of Mexico, on Friday, December 1, we were met at the depot by Dr. Licéaga, president of the Supreme Board of Health, with his associates, both ladies and gentlemen, the former coming to greet the ladies of the party, which they did in a most cordial and gracious manner. To add to the honor of our reception, a fine brass band located in the station played beautifully, while waiting outside were handsome private carriages to conduct us to our hotels, a Mexican gentleman going in each carriage as cicerone. This reception was an earnest of the hospitality which, beginning the same night with an elegant reception by the Governor of the Federal District at the municipal palace, was continued through the week in a manner that can only be described as princely. While possibly some may deem these allusions to the social features of the meeting somewhat out of place in a publication of this kind, we feel that some acknowledgment should be made of a hospitality so cordial, so elegant, and so extensive—more especially as our Board was honored by having its delegate selected to respond for the United States to the address of welcome by Dr. Licéaga.

The City of Mexico is a handsome modern city of between three and four hundred thousand population, situated on a broad plateau over 7,000 feet above sea-level, with a most delightful climate. The improvement in the fourteen years that have elapsed since the last meeting there is said by those who were then present to have been remarkable. And in no respect has this progress been more marked than along sanitary lines. The president of the Supreme Board of Health is a very able man, but he could accomplish but little were it not for the enlightened policy of President Diaz and the generous support of the Government.

The programme of the meeting was quite a full one, a large number of papers being presented. Naturally a large proportion of them were in Spanish, but translations of the more important ones were furnished the English-speaking members. Most of the subjects of special interest in their relation to the public health were dealt with. We were much interested in the papers read and their discussion in the laboratory section of a laboratory standard for milk. Dr. Russell, professor of biology in the University of Wisconsin, read a very interesting paper, giving the results of long-continued experiments, or rather tests, of the milk of a herd of healthy cows. The variation in the milk of the different cows and in the milk of individual cows from day to day was so great that the conclusion reached was that the establishment of a definite standard at the present time was impossible. We noted the fact that in the milk regulations of the more advanced States of the North—Massachusetts, for example—temperature was a very important item, it being required that the milk should be immediately cooled after being drawn, and kept down to 50° or less. In our climate, with ice so costly,



it was evident to our mind that the standard aimed at was impossible of attainment, and that practically we were restricted to seeing that dairy herds were healthy, well fed and kept clean and that the milk be delivered in sterilized glass bottles.

The "hit" of the meeting, however, was the mosquito demonstration with the stereopticon, by Dr. Kohnke, late health officer of New Orleans, in connection with his account of the recent epidemic of yellow fever in that city. To show the difference between the male and female, living mosquitoes were projected on the screen, and but for their gigantic size they looked very familiar as they flew about. The most interesting picture, however, was that of the larvæ, showing how they were killed by oiling the surface of the water. It was fascinating and satisfying to a revengeful nature to see one of them stick her breathing-tube up into the layer of oil, then wriggle and twist in a most frantic manner, and bending double grab the end of the tube with her mouth to remove the oil and finally straighten out and float to the top, dead. It was "the real thing," and no doubt most effective when used, as it was. Dr. Kohnke stated, in educating the people of his city. Our Mexican friends were so impressed that by special request of Dr. Licéaga, it was repeated before adjournment.

Dr. Domingo Orvañanos, secretary of the Supreme Board of Health of Mexico, was elected president unanimously, and Dr. Kohnke first vice-president. Atlantic City was selected for the next meeting, and after hearty resolutions of appreciation and thanks were adopted the Association adjourned.

## REVIEW OF DISEASES FOR NOVEMBER, 1906.

## SEVENTY-FIVE COUNTIES REPORTING.

Ninety-four counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of November the following diseases have been reported from the counties named:

MEASLES.—Caldwell, 12 cases; Cumberland; Haywood, several; Montgomery, a few; New Hanover, 1; Northampton, many; Onslow; Randolph, 2; Vance, a few; Warren, a few—10 counties.

WHOPING-COUGH.—Ashe, 40; Beaufort, 1; Caldwell, 5; Caswell, several; Cumberland; Davidson; Duplin, 8; Harnett, several; Martin, a few; Mecklenburg; Mitchell, many; Onslow; Randolph, 10; Vance, a few—14 counties.

SCARLATINA.—Alexander, 3; Ashe, 6; Caldwell, 12; Forsyth, several; Guilford, 1; New Hanover, 1; Pitt, 1; Randolph, 3—8 counties.

DIPHTHERIA.—Alexander, 2; Beaufort, several; Bladen, 19; Caldwell, 7; Camden, 2; Caswell, 14; Craven, 11; Cumberland; Duplin, 6; Forsyth, several; Greene, 3; Guilford, 4; Haywood, 2; Henderson, 2 (there was an error in last month's Bulletin, the number reported from this county was only 1); Hertford, 6; Lenoir, many; Lincoln, 2; Mecklenburg; Mitchell, a few; New Hanover, 7; Northampton, several; Onslow; Orange, 1; Pitt, 8; Randolph, 5; Richmond, 1; Rowan, 2; Rutherford, 2; Union, several; Vance, 20; Wake, 8; Warren, 8; Watauga, 1; Yancey, 2—34 counties.

TYPHOID FEVER.—Alexander, 2; Ashe, 4; Beaufort, 2; Bladen, 3; Caldwell, 12; Caswell, 2; Catawba, 2; Cumberland; Davidson; Durham, 2; Forsyth, a few; Graham, 1; Greene, 1; Guilford, 4; Harnett, several; Haywood, 8; Johnston, a few; Lenoir, several; Lincoln, 10; Madison; Martin, a few; Mecklenburg; Mitchell, many; Montgomery, 2; Nash, 3; New Hanover, 2; Onslow, 4; Orange, 3; Randolph, 2; Richmond, several; Robeson, a few; Rowan, a few; Rutherford, 8; Scotland, a few; Union, several; Wake, 2; Warren, 4; Washington, 1; Wilson; Yancey, a few—40 counties.

MALARIAL FEVER.—Brunswick; Currituck, a few; Edgecombe; Gates, a few; Granville; Hertford; Hyde; New Hanover; Northampton; Onslow—10 counties.

MALARIAL FEVER,, PERNICIOUS.—Granville, 1.

MALARIAL FEVER, HEMORRHAGIC.—Craven, 2; Hyde, 3; New Hanover, 1; Northampton, 3.

CEREBRO-SPINAL MENINGITIS.—Lenoir, 1; Nash, 1; Wayne, 1.

INFLUENZA.—Caswell, mild, in all parts; Edgecombe, in all parts; Gates, many; Hertford, a few; Lenoir, in all parts; Lincoln, in all parts; Montgomery; New Hanover, in all parts; Person; Rowan; Warren, in all parts—11 counties.

PNEUMONIA.—Alexander, 4; Alleghany, several; Ashe, 6; Caswell, 3; Cherokee, 4; Cumberland; Davidson; Durham, 3; Gates, 2; Granville; Greene, 2; Jackson, 5; Johnston, a few; Lenoir, several; Lincoln, 12; Martin, a few; Mecklenburg; Montgomery, 1; Nash, 3; New Hanover, a few; Person; Randolph, 3; Richmond, several; Robeson, a few; Union; Warren, 1; Yadkin, 2; Yancey, 2—28 counties.

TONSILLITIS.—Brunswick, Burke.

SMALLPOX.—Alamance, 8; Ashe, 10; Guilford, 8; Person, 1; Randolph, 21; Wake, 40—6 counties.

CHOLERA, IN CHICKENS.—Camden.

CHOLERA, IN HOGS.—Camden, Duplin, Jackson, Northampton.

DISTEMPER IN HORSES.—Burke, Graham.

QUINSY, IN HOGS.—Cherokee.

No diseases reported from Anson, Bertie, Carteret, Chowan, Cleveland, Davie, Iredell, McDowell, Pasquotank, Polk, Transylvania, and Wilkes.

No reports received from Buncombe, Chatham, Clay, Columbus, Dare, Franklin, Gaston, Halifax, Macon, Moore, Pamlico, Pender, Perquimans, Rockingham, Sampson, Stanly, and Swain.

## SUMMARY OF MORTUARY REPORTS FOR NOVEMBER, 1906.

## TWENTY-TWO TOWNS.

	<i>White.</i>	<i>Col'd.</i>	<i>Total.</i>
Aggregate population .....	118,600	79,350	197,950
Aggregate deaths .....	133	150	283
Representing temporary annual death-rate per 1,000 .....	13.5	22.6	17.1
<i>Causes of Death.</i>			
Typhoid fever .....	8	6	14
Malarial fever .....	5	7	12
Diphtheria .....	2	2	4
Whooping-cough .....	0	1	1
Pneumonia .....	10	10	20
Consumption .....	10	30	40
Brain diseases .....	8	9	17
Heart diseases .....	14	11	25
Neurotic diseases .....	2	4	6
Diarrhœal diseases .....	9	5	14
All other diseases .....	60	56	116
Accident .....	3	7	10
Suicide .....	2	0	2
Violence .....	0	2	2
	<hr/>	<hr/>	<hr/>
	133	150	283
Deaths under five years.....	40	40	80
Still-born .....	10	12	22

## Mortuary Report for November, 1906.

TOWNS AND REPORTERS.	RACES.	POPULATION.		TEM- PORARY ANNUAL DEATH- RATE PER 1,000.																				
		By Races.	Total.	By Races.	Total.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL By Races.	TOTAL By Towns.	DEATHS. Deaths under five years. Still-born.
Charlotte	W.	18,000		13.3		2																20	5	3
Dr. F. O. Hawley.	C.	12,000	30,000	12.0	12.8	1		1				2	1					8				12	32	2
Durham	W.	12,000		17.0		2						3	1		2		3	6				17	30	1
Dr. T. A. Mann.	C.	6,000	18,000	26.0	20.0								4					8	1			13	3	1
Edenton	W.	1,500		16.0																		2	5	1
Dr. Thomas J. Hoskins	C.	2,500	4,000	14.4	15.0													3				3	1	
Elizabeth City	W.	6,000		16.0				1								1	4	2				8	19	1
Dr. H. D. Walker.	C.	4,000	10,000	33.0	22.8	1		1				1	2		1	1	4		4			11	3	
Fayetteville	W.	3,500		10.3		1																3	5	
Dr. A. S. Rose.	C.	2,500	6,000	9.6	10.0									1	1							2	5	1
Greensboro	W.	10,000		15.0		2						1	2	1			5	2				13	24	4
Dr. Edmund Harrison.	C.	5,000	15,000	26.4	19.2							3	2			1	4	1				11	6	2
Henderson	W.	2,000		0.0																		0	10	1
Dr. G. A. Coggeshall.	C.	2,300	4,300	52.2	26.1				2			1	3	1		2		1				10	4	
Lexington	W.	3,000		0.0																		0	0	
J. H. Moyer, Mayor.	C.	600	3,600	0.0	0.0																	0		
Marion	W.	1,500		16.0									2									2	2	
Dr. B. L. Ashworth.	C.	100	1,600	0.0	15.0																	0	2	
Oxford	W.	1,550		15.5					1									1				2	6	
Dr. S. D. Booth.	C.	1,500	3,050	32.0	23.6							2	2									4	1	
Raleigh	W.	9,000		32.0						1		3	2	4	3		10		1			24	37	5
T. P. Sale, Clerk B. H.	C.	7,000	16,000	22.3	27.7							3	3		3		4					13	6	1
Rocky Mount	W.	3,000		4.0								1										1	2	2
Dr. L. C. Covington.	C.	1,900	4,900	6.3	4.9													1				1		
Salem	W.	3,400		10.6														3				3	7	3
S. E. Butner, Supt. H.	C.	400	3,800	120.0	22.1													3	1			4		
Salisbury	W.	7,400		3.2														1	1			2	10	
Dr. H. T. Trantham.	C.	3,600	11,000	26.7	10.9				1				1	3				2	1			8		
Southport	W.	900		13.3														1				1	2	
Dr. J. A. Doshier.	C.	500	1,400	24.0	17.1													1				1	1	
Tarboro	W.	2,500		0.0																		0	3	
Dr. S. N. Harrell.	C.	1,000	3,500	36.0	10.3										1			1	1			3		
Wadesboro	W.	1,200		10.0														1				1	1	
Dr. J. H. Bennett.	C.	800	2,000	0.0	6.0																	0		
Washington	W.	4,000		30.0		1							2	1			6					10	14	2
Dr. John G. Blount.	C.	3,000	7,000	16.0	24.0	1							1				2					4	2	
Weldon	W.	750		0.0																		0	3	
J. T. Gooch, Mayor.	C.	750	1,500	48.0	24.0	1												1				3	1	
Wilmington	W.	16,000		13.5						2	1	2	2		4	1	5					18	55	9
Dr. Charles T. Harper.	C.	14,000	30,000	31.7	22.0	1		3		1		9	1	4	1	3	11	2				13	7	14
Wilson	W.	3,800		9.5								1					1		1			3	10	3
Dr. W. S. Anderson.	C.	3,000	6,800	28.0	17.6			2				1	1				2					1	7	
Winston	W.	7,600		4.7								1		1			1					3	6	1
E. A. Lockett, H. O.	C.	6,900	14,500	5.2	5.0	1						1			1							3		1

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

### County Superintendents of Health.

---

Alamance .....	Dr. George W. Long.	Jones.....	
Alexander .....	Dr. O. L. Hollar.	Lenoir .....	Dr. C. L. Pridgen.
Alleghany .....	Dr. B. E. Reeves.	Lincoln .....	Dr. R. W. Petrie.
Anson .....	Dr. J. H. Bennett.	McDowell .....	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon .....	Dr. F. L. Siler.
Beaufort .....	Dr. John G. Blount.	Madison .....	Dr. W. J. Weaver.
Bertie .....	Dr. H. V. Dunstan.	Martin.....	Dr. W. E. Warren.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick .....	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe .....	Dr. D. E. Sevier.	Montgomery .....	Dr. J. B. Shamburger.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash .....	Dr. J. P. Battle.
Caldwell .....	Dr. C. L. Wilson.	New Hanover .....	Dr. W. D. McMillan.
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret .....	Dr. F. M. Clarke.	Onslow.....	Dr. Cyrus Thompson.
Caswell .....	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba .....	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
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Hertford .....	Dr. C. F. Griffin.	Wilkes.....	Dr. John Q. Myers.
Hyde .....	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell .....	Dr. M. R. Adams.	Yadkin .....	Dr. M. A. Rovaal.
Jackson.....	Dr. William Self.	Yancey .....	Dr. J. B. Gibbs.
Johnston .....	Dr. Thel Hooks.		

# BULLETIN

OF THE

## NORTH CAROLINA BOARD OF HEALTH

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*Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.*

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GEO. G. THOMAS, M. D., <i>Pres.</i> , Wilmington.	T. E. ANDERSON, M. D.,--Statesville.
S. WESTRAY BATTLE, M. D.,--Asheville.	J. HOWELL WAY, M. D.,--Waynesville.
HENRY W. LEWIS, M. D.,-----Jackson.	W. O. SPENCER, M. D.,----Winston-Salem.
W. P. IVEY, M. D.,-----Lenoir.	J. L. LUDLOW, C. E.,----Winston-Salem.

RICHARD H. LEWIS, M. D., *Secretary and Treasurer*, Raleigh.

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VOL. XXI.

JANUARY, 1907.

No. 10.

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### TO THE COUNTY SUPERINTENDENTS OF HEALTH.

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The Biologist of the State Laboratory of Hygiene desires to secure certain data needed to complete the establishment of normal of quality for surface and shallow well-waters from different geological formations of the State. For this purpose he will send to County Superintendents of Health in different sections of the State a number of small sterilized bottles in which to procure samples of well and spring waters used for drinking purposes and known to be unpolluted and of good general quality for drinking purposes. Carriage will be paid by the Laboratory both ways on these bottles and samples. The wells sampled should have the following special qualifications and the sampler should determine the conditions and surroundings of the well from personal inspection, to-wit:

1. The well should be not less than twenty feet deep.
2. The well should not be within 150 feet of a privy, manure pile or sewer, nor where kitchen or household slops are thrown on the ground.
3. The casing of the well should extend at least two feet above the general level of the surface.
4. The platform of well should be in good condition.
5. The well should be one in constant use for drinking purposes.
6. No typhoid cases should have appeared in any family using this well within a year past.

Samples and correspondence relating to this subject should be addressed to the undersigned. Very truly yours,

GERALD MCCARTHY,

*Biologist.*

RALEIGH, N. C., January 15, 1907.

We commend the above communication from the Biologist of our State Laboratory of Hygiene to the County Superintendents to whom he may apply for samples, and bespeak their interest and careful attention.

Safe drinking-waters vary in their constitution according to the geological formation in which they are found. The object of the Biologist is to establish for each section the normal character of the good water in that locality as a standard by which to judge suspected samples that may be sent in for analysis. For example, an amount of chlorine which would excite serious suspicion of water from one locality would in that from another mean nothing.

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### THE MANAGEMENT OF TUBERCULOSIS—SANITY, CANDOR, HUMANITY.\*

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J. H. MUSSER, M. D., PHILADELPHIA.

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The best has been said by the best minds of the profession and by many of the best of the laity on this vast subject. It ill becomes one untrained in literary work, with little time for the study, to inflict on the profession further dissertation that can scarce be more than repetition. Your committee, however, thought perhaps it might not be unseemly for one at this timely period to say a few words born of an experience in hospital and home on this subject. They know, oft repeating can alone bring conviction, and have no doubt calculated accurately on the endurance of the profession. Opportunity will be taken, therefore, to consider in general the subject of the management of tuberculosis and to point out some present-day dangers, if such suggestive word may be used, in present-day tendencies, and then to discuss special features which seem worth while employing to relieve sufferers from tuberculosis.

#### VARYING THERAPEUTICS.

No disease of the human race presents throughout the entire history of its therapeutics such a wild orgy of excesses, such a delirium of extremes as that of tuberculosis. In quarter-century periods from first to last there have been such wide variations of treatment over degrees of latitude which if charted would appear like intermittent rushes from the equator to the pole and the pole to the equator. So well known are these extremes that a favorite mode of expression of these variations is to compare them to the swinging of a pendulum. We hear that the pendulum has swung too far on one line of treatment or too far in the opposite direction on another line of treatment. With the swing to the right or the left there is rejoicing in one camp and a corresponding

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\* Read at the Philadelphia Tuberculosis Exhibition.



wailing and gnashing of teeth in the other. All efforts seem to be directed to send the pendulum into the first or third quarter. Fortunately, a few students of tuberculosis, in season and out of season, of robust mind and clear vision, attempt to hold the pendulum in the median line.

Prior to the coming of Koch, it was drugs and foods that had their passing hour. There was the cod liver oil period, the phosphorus period, the hypophosphite period, the arsenic, the iron, the digitalis, the phenol, the quinine, the creosote and the coal tar periods. Those who are not among the very old in the profession well remember the psychic inflation of the sulphuretted hydrogen gas treatment which ballooned itself around the world, until by virtue of its own expansion, it went up into the air, a method of unsavory memory. Compressed air and vacuum apparatus of all kinds have been limboed to the garret of innocuous desuetude, and save perhaps for pocket vaccination are chiefly useful only as relics of the will-o'-the-wisp period of pulmonary therapeutics.

For many decades climate and clime were the end-all of all tuberculosis management in the selection of which the profession trended, now here, now there, in accordance with the energies of the devotees of the respective region. Even since the bacteriologic era in tuberculosis there has been much chasing after false gods. Who does not recall the great excitement a score of years since brought about by Koch himself in his premature statements as to the value of tuberculin? It was not alone the profession who suffered. The confidence that is lost by the explosion of such premature fancies is harmful, but it is as naught compared to the distress, the blasting hope, the throttling of courage which befalls the poor sufferer from this disease.

A record of such vagaries is not a credit to the profession. It is true there were sufficient excuses in the past. The loss of life was appalling. The suffering was beyond estimation. The ignorance was most dense. "A constitutional disorder," cried one; "a local disorder," called another; "of inflammatory origin," said one; "of neoplastic origin," spoke his neighbor. From pillar to post the pathologist tore the therapist. Is it any wonder with the stress of his responsibility he grasped at straws? As the light dawned, stability grew, and with each step forward in etiology, the grasp of endeavor grew firmer and firmer. Out of greater insight into biology and the precision of bacteriology have come these truths: Tuberculosis is an infectious disease, the extent and course of which depends on constitutional conditions. Every person can be infected; only a few can have tuberculosis. In short, tissue resistance and adaptability decide whether an infected person shall have tuberculosis, or not. With this clear, the strife was to determine what brings about adaptability and resistance in the biologic world. Does it not seem strange indeed that that which great men have plead for for years and have sacrificed time and strength to prove by experiment and practice, only slowly filtered into our life-work? The substance of their

pleadings makes our line of action to-day; conservation of strength brings about tissue resistance, adaptability and cure.

With such record of fetish worshiping in tuberculous therapeutics it is no wonder that any one familiar with its history should not endeavor to be conservative, and try to hold to the good of the old while grasping the benefits of the new. Is it any wonder that some may stand aghast at the dogmatic assertions of present-day management? Is it not proper to plead for sanity to-day, almost as strongly as it was necessary in the past? Do we not already see dangers from the far swing of the pendulum? Are not some methods of the past too ruthlessly cast aside? Affirmative answers can alone be given to such queries, and hence to us is given the right to protest against a few latter-day tendencies, although it must be briefly.

#### PROTESTS.

1. *The Public are Dangerously Educated as to the Curability of Tuberculosis.*—They do not understand the degrees of infection, the difference in course of the varieties of tuberculosis, and the variations in the power of resistance of the individual. Tuberculosis is tuberculosis to them, whether of cerebral, pulmonary, serious membranous or other form. To the family, the fond mother or beloved sister does not differ constitutionally from those of other families. They can not and will not recognize constitutional types. This harm is a result. The unwelcome termination when it comes brings a discredit to science not justified. The physician to whom the care of the patient is entrusted is reflected on. For the sake both of the patient and the physician a plea that such extremes should not be disseminated, is proper. Should we not better have humanity feel the hope we have, that halcyon days are coming, but until then we dare only say, fortunately with greater truth than ever, *tuberculosis is sometimes curable*.

The public should know that in the best sanatorium in this country, with the best possible means at command, in an experience of seventeen years, 66 per cent. of the incipient cases continued well; 28.6 per cent. of the advanced cases are well, and 2.5 per cent. of the far advanced cases remain cured. What a splendid record and what a triumph for Trudeau! "Peace hath her victories far more renowned than war." The public should know the chances are about even as to success or failure in tuberculosis under ordinary circumstances if they do the right thing. Let the great suffering body understand that while progress is fast apace, the millennium of therapeutics in tuberculosis can not be brought forth in a day or a decade. Let them know that there is a dawn, indeed that the sun is nearing the meridian and that in prevention, in scientific methods of vaccination or immunization and in the skilled use in the future of tuberculin, the high noon of success may soon be on us.

2. *The Sanatorium Treatment is Placed on Too High a Pedestal by Many of its Ardent Advocates.*—Already danger is sighted. For ex-

ample, it had been so extravagantly promulgated in England that the public believed a sanatorium, and six months' residence therein, quite sufficient to bring about cures in tuberculosis. There is danger of the splendid, massive sanatorium movement in that country toppling over. Only recently the London *Lancet* devoted an issue in an attempt to stem the storm. No one can deny the great value of sanatorium treatment and wish that the properly selected cases of tuberculosis which can not be treated otherwise, could be placed under such favorable conditions. But with this, unfortunately, not one tithe of the struggle is over. A larger scheme than sanatorium treatment must be invoked and a longer time permitted to bring about a "cure." The sanatorium and sanatorium methods are only a fraction in the great struggle.

3. *Should not the Temporary Fiasco of Koch and the yet Inconclusive Statements of Behring Behroove Scientific Workers to Beware of Hasty Conclusions on Ill-matured, Imperfectly Observed Data?*—The story of Trudeau's patience and persistence in pathologic work is not a brilliant tale of adventure before the footlights. It is the stately march of an epic. Laboratory labors should be repeated and repeated, reflected on and then brought forth.

The opsonic theories of the brilliant technician, Wright, so attractive and of such illumination as to lead one on, must have more searching scrutiny.

4. *Our Great Sanatorium Endearor Must not be Taken out of our Hands by Virtue of our own Enthusiasm and Taken up by the Politicians as their Stock in Trade.*—That this may occur is seen by the recent action of the Rutland Sanatorium, Massachusetts, while there are rumors that the public sanatoria in New York State are not in very happy condition. Fortunately, in Pennsylvania the present secretary of the Department of Health, Dr. Dixon, is alive to the great dangers of politically managed sanatoria, and Dr. Charles B. Penrose, to whom we owe our great State health service, sees clearly the needs of the hour. They are ever ready to strike. In our own Flick we have a man of courage to protest at such usurpation. We owe to these three men the nipping in the bud of legislative attempts to use the cloak of charity for ulterior methods.

The profession should be a unit in demanding that the cure and treatment of this class of cases should be positively carried out on lines which are agreed on by the great experts in this disease, to be correct. There can be no deviation. If from our own body selfish and self-seeking men come forward without previous training to take up this work with politics behind them, there should be such uprising of the profession as to appall the stoutest in assurance. If it is not done the whole matter of such relief will fall to the ground. The profession have a right to feel indignant that those of their number who have temporary political power, should, without training or serious attention to tuberculosis, as far as their past record would show, assume to take charge of large sanatoria. Fixed principles should control the management of the insti-

tution. To expose incipient cases to the mixed infections of advanced cases would be criminal. There is much opportunity for imposition on the part of the public. The greatest diagnostic skill is required to select proper cases. We should be a unit in demanding the selection of men with experience in such work for the position; they should be trained as specifically as we ask the alienist to be trained. They should have such sanity and such humanity as to stand above all temptation and sinister influence.

#### THE MANAGEMENT OF TUBERCULOSIS.

It is interesting to note that a discussion of the management of tuberculosis is approached from a different standpoint than had been the custom as short a period of time as twenty-five years ago. He who engaged in such inquiry would have tried to launch some specific treatment for this then considered dread disorder either by drugs, by climate or with respiratory armamentarium. The hearer would have gone from the assembly hall disgusted at the waste of time had he not taken with him a new wrinkle in the use of drugs. The ear is strained to catch another story. It is to hear of the efficiency of pure air and sunshine, of good food and the mode of its administration and of well-planned rest, regulated to the bodily needs of the patient, nicely adjusted to his physical requirements.

A century ago Benjamin Rush, the Sydenham of his day, anticipated our present-day methods, and half a century later the elder Bowditch cured himself by the application of our own well-formulated principles. While communities, as those of Germany, have had well-formulated plans of sanatorium treatment, a new community, as ours, putting forth energy in constructive duties had little to spare for conservation. This spirit of construction in politics, in economics and in the upbuilding of the nation and of the individual, brooks no thought of salvation, and, it is regretful to say, has minimized the value of human life. With us sanitation, both public and private, is as yet in its swaddling clothes. There are signs that recently the juggernaut car of industry which ruthlessly rides down individuals has been rudely awakened. The value to the State and to the family of human life is daily more and more appreciated. Out of this will come the success that should pertain to sanatoria.

Such success must depend on the candor of the physician to whom the suffering patient applies, the thoroughness of method in the conduct of the institution and persistence in the one principle that it is the individual, the human being, that is treated, not the disease.

*Candor Should Be Our Greatest "Motif."*—1. As to diagnosis: If a case is suspicious, but not positive, withhold judgment and ask for another examination. No one should be cleared of suspicion or condemned on one examination, when the case is incompletely developed. 2. As to the patient: Tell him, with exercise of judgment as to his temperament, at once the nature of his illness. A very sad chapter of medi-

cine could be written of the dillydallying of doctors at the threshold of this disease, either from ignorance, lack of candor and courage, or, it is suggested, from a desire to continue in attendance on the patient for fear his methods or diagnosis may be criticised. 3. As to the public: Notification is just, and should be a universal practice.

*Treatment.*—It can not be gainsaid that the treatment of a case of tuberculosis must be on sanatorium lines. It can not be disputed that the best results are obtained by these means and by these means alone. As successful treatment implies an early diagnosis, this in turn means (a) education of the public not to be callous as to the surroundings. If he finds himself in an infected environment or in unhygienic surroundings, an examination from time to time should be conducted. (b) Education of medical student and practitioner how to make a diagnosis. Unfortunately the very excesses in fear as to contagion have barred incipient cases from the hospital wards and the student is debarred from opportunity. (c) As to the institutions, successful treatment demands that only an expert in the management of tuberculosis must have charge and that in a "cure" house only incipient cases must be admitted.\*

Treatment in a sanatorium or in the home by sanatorium methods involves, to the extreme: rest, fresh air and an abundance of food. The amount of rest is to be judged by the strength of the patient, the frequency of the pulse, the extent of neurasthenia, if present: and, most important, the temperature. The fresh air is to be unlimited in amount, delivered in quiet filtration if possible, certainly not whilst riding in a storm or flying in the wind. Sunlight is to be unstinted in amount. Food to be of nutritious value, the amount and character must be determined by the digestive capacity of the stomach. To this end, careful estimations must be made of gastro-intestinal conditions and treatment directed accordingly. Perhaps the only excuse for drugs is to modify gastric conditions and enhance digestive power; to tone up the circulation (*digitalis*) or to correct chloro-anlinia (*iron and arsenic*).

After the disease is arrested, gradual exercise to bring the patient up to a normal physical life must be evolved. Hence no return at once to former duties and not to any bad environment. The sanatorium or its methods is not even the half-way house to cure. For the well-to-do, climate and change are essential, for the artisan or laborer, a place or position of light work outdoors with opportunities for rest, and little chance for fatigue.

#### A PROTEST AND PLEA.

Is climate of value? Unhesitatingly, yes. Do we not want a sunny room for our rest patient; should he be denied days of sunshine if he can get them? Do we not want a clear sky, a tonic air and but little dust for our sanatorium patients? Should they be denied the better class? Rest, rest is the cry. Can the well-to-do get rest in their own bustling

\*It almost goes without saying that such methods can not be conducted in institutions in which politics plays the greater part in the management.

environment? Does not removal to a haven of peace and an atmosphere of quiet mean removal from temptation? Of course, climate without food is death, climate with homesickness is almost destruction. Climate has its limitations, but it has its immense advantages. Who can cry out against sea air in bone tuberculosis and tabes mesenterica in children? Moreover, certain forms of tuberculosis, as of the larynx, do badly in the northern latitudes. For them, California and New Mexico are better than northern New York. And so reference could be made to many climatic conditions which would avail much in groups of cases, all climatic treatment to be subsidiary to rest and diet.

It is not necessary to dilate on this phase of the subject. The consensus of the profession as to climatic indications held ten years ago, holds as well to-day, and it would be well for the younger student and experts in tuberculosis to study them carefully. To those who can have an appropriate climate with proper food and rest, the likelihood of permanent cure is infinitely better than for the home or sanatorium case.

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## REVIEW OF DISEASES FOR DECEMBER, 1906.

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### SEVENTY-FOUR COUNTIES REPORTING.

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Ninety-four counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of December the following diseases have been reported from the counties named:

MEASLES—Alexander, 4; Camden, 6; Cumberland, many; Durham, a few; Haywood, several; Madison, in all parts; Mecklenburg; Northampton, many; Onslow; Rowan, a few; Surry, 5; Wilkes, 12; Yadkin, 1—13 counties.

WHOOPING-COUGH—Caswell, several; Cumberland; Duplin; Haywood, a few; Hertford, 10; Martin, a few; Mecklenburg; New Hanover, 2; Northampton; Randolph, 6; Sampson, many; Vance, a few; Yancey, a few—13 counties.

SCARLATINA—Alexander, 1; Bertie, 1; Buncombe, 3; Caldwell, 2; Haywood, 2; Randolph, 1; Wake, 2; Washington, 1; Yancey, a few—9 counties.

DIPHTHERIA—Alexander, 4; Caldwell, 4; Camden, 1; Caswell, 4; Craven, 2; Duplin, 4; Durham, 1; Forsyth, a few; Franklin, 1; Greene, 2; Guilford, 5; Martin, 1; Mecklenburg; New Hanover, 6; Onslow, sev-

eral; Pender, a few; Randolph, 2; Robeson, 2; Rowan, 1; Sampson, 1; Union, 5; Vance, 2; Wake, 4; Yadkin, 1; Yancey, a few—25 counties.

TYPHOID FEVER—Alexander, 1; Brunswick, 1; Burke, 1; Caldwell, 3; Craven, 2; Cumberland, a few; Davidson; Durham, 1; Edgecombe, 2; Greene, 1; Halifax, a few; Haywood, 3; Henderson, 1; Lincoln, 2; McDowell, 1; Martin, 8; Mecklenburg; New Hanover, 5; Onslow, 2; Pender, 1; Randolph, 3; Robeson, several; Rowan, 1; Sampson, a few; Scotland, a few; Union, 3; Wake, 4; Washington, 2; Wilson, several; Yadkin, 2; Yancey, several—30 counties.

MALARIAL FEVER—Brunswick; Edgecombe, in all parts; Hertford; Martin; Onslow; Union—6 counties.

MALARIAL FEVER, PERNICIOUS—Martin, 1.

MALARIAL FEVER, HEMORRHAGIC—Martin, 3; Onslow, 1.

INFLUENZA—Alamance; Bertie; Camden, in all parts; Caswell, in all parts; Currituck; Forsyth, many; Graham, in all parts; Hertford; Johnston, in all parts; Lincoln, in all parts; Pender, in all parts; Randolph; Rowan; Rutherford, in all parts; Wilkes, in all parts—15 counties.

PNEUMONIA—Alexander, 10; Alleghany, several; Cabarrus, 8; Camden, 3; Caswell, 3; Catawba, 1; Cumberland, 1; Currituck, a few; Davidson; Davie, a few; Durham, 4; Edgecombe, 2; Forsyth; Franklin, several; Gaston, 12; Greene, 3; Guilford; Johnston, a few; Lincoln, 6; Martin, several; Mecklenburg; Montgomery, 6; Nash, 14; New Hanover, a few; Northampton; Onslow, several; Pender, 1; Person; Randolph, 2; Richmond, several; Robeson, several; Rowan, a few; Transylvania, a few; Union, a few; Wake, 16; Wayne, several; Wilkes, 10; Yancey, in all parts—37 counties.

MENINGITIS, CEREBRO-SPINAL—Union, 1.

TONSILLITIS—Currituck.

VARICELLA—Madison, in all parts.

SMALLPOX—Alamance, 1; Bertie, 1; Currituck, 2; Durham, 3; Franklin, 3; Guilford, 9; Johnston, 5; Richmond, 5; Wake, 68—9 counties.

CHOLERA, IN HOGS—Duplin, Hertford, Sampson.

DISTEMPER, IN HORSES—Burke, Union, Yancey.

QUINSY, IN HOGS—Cherokee.

No diseases reported from Anson, Beaufort, Cleveland, Gates, Granville, Hyde, Iredell, Orange, Pasquotank, Pitt, Polk, Watauga, and Wilkes.

No reports received from Bladen, Carteret, Chatham, Chowan, Clay, Columbus, Dare, Harnett, Jackson, Jones, Lenoir, Macon, Mitchell, Moore, Pamlico, Perquimans, Rockingham, Stanly, Swain, and Warren.

## SUMMARY OF MORTUARY REPORTS FOR DECEMBER, 1906.

## TWENTY TOWNS.

	White.	Col'd.	Total.
Aggregate population . . . . .	115,750	76,850	192,600
Aggregate deaths . . . . .	121	134	255
Representing temporary annual death-rate per 1,000 . . . . .	12.5	20.9	15.9
<i>Causes of Death.</i>			
Typhoid fever . . . . .	6	3	9
Malarial fever . . . . .	0	1	1
Pneumonia . . . . .	13	18	31
Consumption . . . . .	12	18	30
Brain diseases . . . . .	12	11	23
Heart diseases . . . . .	10	12	22
Neurotic diseases . . . . .	5	0	5
Diarrhœal diseases . . . . .	6	4	10
All other diseases . . . . .	48	62	110
Accident . . . . .	6	5	11
Suicide . . . . .	1	0	1
Violence . . . . .	2	0	2
	121	134	255
Deaths under five years . . . . .	36	37	73
Still-born . . . . .	7	11	18



**Mortuary Report for December, 1906.**

TOWNS AND REPORTERS.	RACES.	POPULA- TION.		TEM- PORARY ANNUAL DEATH- RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL By Races.	TOTAL By Towns.	DEATHS. Deaths under five years. Still-born.	
		By Races.	Total.	By Races.	Total.																				
Charlotte .....	W.	18,000	30,000	11.3	11.6							2	2	4	2			7				17	29	4	2
Dr. F. O. Hawley.	C.	12,000		12.0										1	1					7	3			12	29
Durham .....	W.	12,000	18,000	15.0	18.0							2	3	1				1	7			15	27	6	1
Dr. N. M. Johnson.	C.	6,000		24.0		1								2	2	1				4				12	27
Elizabeth City .....	W.	6,000	10,000	12.0	16.8	1						1	1		2	1						6	14	1	
Dr. H. D. Walker.	C.	4,000		24.0		1								1	1	1	2				2			8	14
Fayetteville .....	W.	3,500	6,000	10.3	14.0	1													2			3			
Dr. A. S. Rose.	C.	2,500		19.2										1		1	1				1			4	7
Greensboro .....	W.	10,000	15,000	16.8	19.2								1	1	2				6	4		14	24	6	
Dr. Edmund Harrison.	C.	5,000		24.0		1								3	1		1	1	3				10	24	7
Henderson .....	W.	2,000	4,300	12.0	16.7								2									2			
Dr. G. A. Coggeshall.	C.	2,300		20.9											1	1	2							4	6
Lexington .....	W.	3,000	3,600	0.0	0.0																	0	0		
J. H. Moyer, Mayor.	C.	600		0.0																				0	0
Oxford .....	W.	1,700	3,200	7.0	11.2								1									1	3		
Dr. S. D. Booth.	C.	1,500		16.0												1					1			2	3
Raleigh .....	W.	9,000	16,000	14.7	20.2									2		1			6	1		11	27	3	
T. P. Sale, Clerk B. H.	C.	7,000		27.4										4			1			11			16	27	6
Rocky Mount .....	W.	3,000	4,900	4.0	4.9														1			1	2		1
Dr. L. C. Covington.	C.	1,900		6.3																	1			...	...
Salem .....	W.	3,400	3,800	0.0	6.3																	0	2		1
S. E. Butner, Supt. H.	C.	400		60.0																	2			2	2
Salisbury .....	W.	7,400	11,000	3.2	12.0										1				1			2	4		
Dr. H. T. Trantham.	C.	3,600		6.7											1						1			...	...
Southport .....	W.	900	1,500	0.0	8.0																	0	1		
Dr. J. A. Doshier.	C.	600		20.0																	1			1	...
Tarboro .....	W.	2,500	3,500	9.6	10.8											1	1					2	4		
Dr. S. N. Harrell.	C.	1,000		24.0																				...	...
Wadesboro .....	W.	1,200	2,000	0.0	6.0																	0	1		
Dr. J. H. Bennett.	C.	800		15.0																	1			...	...
Washington .....	W.	4,000	7,000	18.0	27.4									4					1	1		6	16	2	
Dr. John G. Blount.	C.	3,000		40.0											1	4	1				3	1		10	16
Weldon .....	W.	750	1,500	32.0	40.0														2			2	2		
J. T. Gooch, Mayor.	C.	750		48.0																	3			3	5
Wilmington .....	W.	16,000	30,000	23.2	25.2	3						5		1	3	3	113	1	1	1		31	63	8	2
Dr. Charles T. Harper.	C.	14,000		27.4				1						3	6	3	3		114	1				32	63
Wilson .....	W.	3,800	6,800	3.2	8.8	1																1	5	1	
Dr. W. S. Anderson.	C.	3,000		16.0													1			3				4	1
Winston .....	W.	7,600	14,500	11.0	12.4							1	1		1		2	2				7	15	3	
E. A. Lockett, H. O.	C.	6,900		13.9										1	3				1	3				8	15

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

### County Superintendents of Health.

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Alamance .....	Dr. George W. Long.	Jones.....	
Alexander .....	Dr. O. L. Hollar.	Lenoir .....	Dr. C. L. Pridgen.
Alleghany .....	Dr. B. E. Reeves.	Lincoln .....	Dr. R. W. Petrie.
Anson .....	Dr. J. H. Bennett.	McDowell .....	Dr. B. L. Ashworth.
Ashe .....	Dr. Manley Blevins.	Macon .....	Dr. F. L. Siler.
Beaufort .....	Dr. John G. Blount.	Madison .....	Dr. W. J. Weaver.
Bertie .....	Dr. H. V. Dunstan.	Martin .....	Dr. W. E. Warren.
Bladen .....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin.
Brunswick .....	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe .....	Dr. D. E. Sevier.	Montgomery .....	Dr. J. B. Shamburger.
Burke .....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus .....	Dr. R. S. Young.	Nash .....	Dr. J. P. Battle.
Caldwell .....	Dr. C. L. Wilson.	New Hanover .....	Dr. W. D. McMillan.
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret .....	Dr. F. M. Clarke.	Onslow.....	Dr. Cyrus Thompson.
Caswell .....	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba .....	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. J. H. Taylor.	Pasquotank .....	Dr. J. B. Griggs.
Cherokee.....	Dr. J. A. Abernathy.	Pender.....	Dr. Robt. H. Bradford.
Chowan.....	Dr. T. J. Hoskins.	Perquimans .....	Dr. C. C. Winslow.
Clay .....	Dr. J. M. Sullivan.	Person .....	Dr. J. A. Wise.
Cleveland .....	Dr. B. H. Palmer.	Pitt.....	Dr. Joseph E. Nobles.
Columbus.....	Dr. H. B. Maxwell.	Polk .....	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph .....	Dr. A. M. Bulla.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. L. D. McPhail.
Currituck .....	Dr. H. M. Shaw.	Robeson .....	Dr. H. T. Pope.
Dare .....	Dr. W. B. Fearing.	Rockingham .....	Dr. Sam Ellington.
Davidson .....	Dr. Joel Hill.	Rowan.....	Dr. I. H. Foust.
Davie .....	Dr. M. D. Kimbrough.	Rutherford.....	Dr. E. B. Harris.
Duplin .....	Dr. A. J. Jones.	Sampson .....	Dr. J. O. Matthews.
Durham .....	Dr. T. A. Mann.	Scotland .....	Dr. A. W. Hamer.
Edgecombe .....	Dr. S. N. Harrell.	Stanly.....	Dr. J. N. Anderson.
Forsyth.....	Dr. S. F. Pfohl.	Stokes .....	
Franklin .....	Dr. R. F. Yarborough.	Surry .....	Dr. John R. Woltz.
Gaston.....	Dr. L. N. Glenn.	Swain.....	Dr. R. L. Davis.
Gates.....	Dr. W. O. P. Lee.	Transylvania .....	Dr. C. W. Hunt.
Graham .....	Dr. M. T. Maxwell.	Tyrrell.....	
Granville .....	Dr. S. D. Booth.	Union .....	Dr. Henry D. Stewart.
Greene.....	Dr. W. B. Murphy.	Vance.....	Dr. John Hill Tucker.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. W. McGee, Jr.
Halifax .....	Dr. I. E. Green.	Warren.....	Dr. P. J. Macon.
Harnett.....	Dr. L. J. Arnold.	Washington .....	Dr. W. H. Ward.
Haywood .....	Dr. J. R. McCracker.	Watauga.....	Dr. H. McD. Little.
Henderson .....	Dr. J. G. Waldrop.	Wayne.....	Dr. J. B. Outlaw.
Hertford .....	Dr. C. F. Griffin.	Wilkes.....	Dr. John Q. Myers.
Hyde .....	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell .....	Dr. M. R. Adams.	Yadkin .....	Dr. M. A. Royall.
Jackson.....	Dr. William Self.	Yancey .....	Dr. J. B. Gibbs.
Johnston .....	Dr. Thel Hooks.		

# BULLETIN

## OF THE

# NORTH CAROLINA BOARD OF HEALTH

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### THE PURIFICATION OF PUBLIC WATER SUPPLIES.

By GERALD MCCARTHY, Biologist, N. C. State Laboratory of Hygiene.

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Pure drinking-water is one of the prime necessities of life. Absolute or chemically pure water does not exist in nature, the nearest approximation being rain-water which has fallen upon uninhabited mountain-peaks after the air has been washed free from dust and germs by a previous shower. "Pure water" in the ordinary sense of the words is any clear and odorless water free from injurious germs, from decaying organic matter, and from injurious minerals. The following is the standard of quality of the North Carolina State Laboratory of Hygiene: "Good drinking-water from shallow wells and streams should contain per million parts not more than: Total solids, 250; turbidity, 4; color, 15; chlorine, 5; nitrites, trace; nitrates, .45; phosphates, light trace; free ammonia, .15; albuminoid ammonia, .20; iron, .5; no alum; no heavy metals except iron; no infusoria or fecal bacteria; no odor."

The ordinary floating dust of the atmosphere contains in enormous numbers the spores or germs of different species of bacteria, molds, yeasts and algae. Some of these are able to live and propagate in water. Many species of putrefactive and pathogenic bacteria live in the soil upon the decaying organic matter or filth which is always present in surface soil of inhabited regions. These filth and disease germs are

likely to be washed into streams by heavy rains, or may find their way with percolating ground water into badly protected wells. From such polluted streams or wells the germs enter the human body with drinking-water and within the body produce such diseases as typhoid fever, cholera, dysentery, and many inflammatory processes.

The surest and most trustworthy test of the wholesomeness of any drinking-water is a bacteriological analysis. The bacteriologist identifies the different species or groups of germs present. The disease-producing germs found in water all belong to the fecal group, of which *Bacillus coli-communis* is the most common and typical species. *Bacillus typhosus*, *Bacillus cholerae-asiatica*, and *Bacillus cholera-suis* are the three most important pathogenic members of this group. Of these, the first is the direct cause of typhoid fever in humans. All three of these pathogenic germs require for their normal development a temperature at or above the ordinary temperature of the human body. Hence they do not multiply very rapidly in natural water supplies and are likely to be overpowered and killed out by the more vigorous saprophytic germs which are always found in surface waters. The usual length of life of *Bacillus typhosus* in ordinary flowing water is about nine days; in still water it may extend to thirty days, and in wet mud to two or more years. The bacillus of typhoid fever is very rarely isolated by the laboratory method from drinking-water, even in localities where the disease is epidemic and is known from other evidences to have been brought in by water. The explanation of this fact is given in the last sentence—the typhoid germs, after having started the epidemic, die out of the water before the disease has reached its typical stage, or the point of development at which physicians can diagnose it from the symptoms. This development requires fourteen to twenty days after actual infection. Once started, the disease can be spread by many agencies, among which flies and other insects are the most important. Bacteriologists condemn as unfit to drink any water which contains *Bacillus coli-communis*, since such waters are considered as having been polluted by fecal matter and may contain typhoid germs.

Bacteriological analyses of water, to be of real use in preventing epidemics of typhoid, must be made systematically and at frequent intervals. Monthly analyses are the least frequent that can be depended upon. An occasional examination by an analyst personally unfamiliar with the locality is worse than useless.

The annual death rate from typhoid fever in North Carolina is about 75 per 100,000 of population. The usual victims of typhoid are persons in the prime of life. The money value of each such life may be conservatively figured at \$2,000. For every death caused by typhoid fever there are about nine recoveries after an average sick period of forty-three days each. The medical and nursing expenses and loss of time caused by an attack of typhoid is on an average \$100 per case. The annual money loss to the State directly and indirectly due to typhoid fever caused by

polluted drinking-water is probably not less than \$2,500,000. At least two-thirds of this loss is an unnecessary and inexcusable waste. Any community having a typhoid death rate exceeding 30 per 100,000 population can be safely set down as consuming polluted drinking-water.

From the records of death rate in a great number of towns in various countries having different kinds of water supply the following table has been compiled:

Source of Water Supply.	Average Death Rate, Due to Typhoid, per 100,000 of Population.
Mountain springs and streams—unfiltered-----	6
Small upland streams—filtered-----	12
Good shallow wells-----	18
Large rivers and lakes-----	30
Small upland streams—unfiltered-----	44
Polluted wells, ponds and streams-----	70 to 300

A compilation of statistics by the Massachusetts Board of Health shows that for 13 towns in that State and for a ten-year period when drinking-water was supplied entirely by shallow wells the annual death rate from typhoid fever was 79.4 per 100,000 population. The same towns for a ten-year period after filtered public water supplies were introduced showed an annual typhoid death rate of 38.3. These statistics prove beyond possibility of doubt that for the average town of 3,000 or more inhabitants shallow wells are a constant menace to the public health, and that where artesian wells are impracticable a filtered public water supply is the only safe and economical source of drinking-water.

In thickly-settled rural neighborhoods and in regions adjacent to towns of 3,000 or more inhabitants the unfiltered water flowing in streams is not safe to drink unless previously boiled. The raw or natural water of such streams may be purified by distillation or by filtration. Distillation is the surest and most perfect way of purifying water, but the cost is commonly prohibitive, and the resulting water, though it be chemically pure, is neither as palatable nor as wholesome as water purified by filtration. Water may also be sterilized by chemical treatment, but such treatment is undesirable from a hygienic point of view.

Of water filters there are in general use for public water supplies two types. What might be called a third type is the so-called "household filter," in which the water is strained through a sponge or a porous tile. It will suffice here to say that the ordinary forms of this type are untrustworthy and worse than useless. The two practicable types are the slow

sand-bed or "European" filter and the rapid, mechanical, or "American" filter. Of the former there are in operation in the United States up to January 1, 1907, only about 30 plants, filtering altogether less than 10 per cent. of total production of filtered water. The mechanical type constitutes nine-tenths or more of all American filter plants, and practically all recent installations are of this type. The bacterial efficiency of both types of filter are practically the same, to-wit, 97 per cent. to 99.5 per cent. The slow sand-bed filter consists essentially of a basin containing at the bottom a two-foot layer of coarse gravel, and of stones not exceeding three inches in diameter, supporting a layer of three feet of sand grading from coarse at bottom to very fine at top. The raw water is admitted at top and descends slowly through the openings between the sand grains, and deposits as it goes the mud and silt it carried and also most of the germs. The water is further purified by bacteria in the sand which oxidize the organic matter into mineral forms. In practice it is found desirable to hold the raw water in a sedimentation basin for 24 to 36 hours before admitting it to the filter bed. Sedimentation for 24 hours will remove two-thirds of the suspended matter and 80 per cent. of the bacteria. This saves the filter much work and greatly decreases the cost of filtration. Most sedimentation basins are from 10 to 15 feet deep. In the United States the cost of a concrete-lined sedimentation and storage basin is about \$3,000 per million gallons capacity. Slow sand-bed filters are usually constructed in units of from one-eighth to one-half square acre of surface. The yield is approximatedly one and one-half gallons per hour per square foot. A filtering surface of one acre will ordinarily yield about 1,500,000 gallons of water in twenty-four hours. But under heavy pressure, with water which has had preliminary sedimentation, this yield may be forced to double.

In the United States the cost of installing a slow sand-bed filter with sedimentation basin, complete—including land, buildings, pumps and connections—is about \$40,000 per million gallons ordinary daily capacity. The cost of running a sand-bed filter in the United States varies from \$3 to \$5 per million gallons of filtered water.

The rapid mechanical filter is the typical American system, and is certain to eventually supplant the more cumbrous and costly slow sand-bed method. The cost of installing a mechanical filter of the best type is only about one-eighth the cost of a slow sand-bed filter of the same capacity. The running expenses are about 50 per cent. larger than with slow sand-bed filters. There are two kinds of mechanical filter, the "Gravity" and "Pressure" kinds. The latter is not reliable, and should never be employed to filter water for drinking purposes. It gives clear water, but the water is likely to contain alum and is dangerous.

Mechanical filters for municipal plants are usually erected in units of 300,000 to 500,000 gallons daily capacity. In the mechanical filter the most important part of the process is the addition of a coagulant, usually sulphate of aluminum. This substance is a powerful anti-septic

and astringent. The chemical decomposes very promptly and completely when brought into contact with lime or other alkaline salts dissolved in water. In decomposing the sulphate of aluminum which is completely soluble, forms sulphuric acid, soluble, and hydrate of aluminum, insoluble. The sulphuric acid then combines with the lime, soda, or magnesia in water, forming, as the case may be, sulphate of lime (gypsum): sulphate of soda (Glauber's salt) or sulphate of magnesia (Epsom salt). Gypsum in small doses is without effect upon the alimentary organs, but causes much waste in cooking. Glauber's and Epsom salts are mild cathartics. The insoluble hydrate of aluminum forms on the surface of the sand a thin gelatinous pellicle through which the water penetrates as it might through a membrane of bladder, leaving behind it not only all the mud, sand and silt, but also from 97 per cent. to 99 per cent. of the germs the raw water contained. Most filters have an automatic appliance for adding the coagulant in a continuous stream and at a given rate. In a properly managed mechanical filter there is never a particle of alum left in the filtered water. The one essential point for guarding against impregnating the filtered water with the alum used is to insure that the raw water contains more than sufficient alkali—lime or soda—to decompose all the coagulant added. For each grain of alum added per gallon, the water must contain at least  $\frac{1}{2}$  gr. lime or some equivalent carbonate.

The sulphate of aluminum on the market is of variable quality. Mr. C. G. Whipple, of New York, a hydraulic engineer of great experience, suggests the following specification in purchasing alum for water filtration:

"The alum should be guaranteed to contain 17 per cent. of alumina soluble in water, and of this at least 5 per cent. shall be in excess of the amount theoretically required to combine with the sulphuric acid present. It shall contain not more than 0.1 per cent. of insoluble matter and débris. It shall contain not more than 0.5 per cent. of iron. The alum shall be crushed so it will pass through a ring three inches in diameter."

We recommend that North Carolina water companies adopt Mr. Whipple's specifications when purchasing alum.

The quantity of sulphate of aluminum per gallon of water which must be used to secure a clear, colorless and nearly germ-free filtered water is not constant, but varies with three factors, namely, turbidity, color and bacterial content of the raw water. Generally speaking, the use of from four-tenths to one grain of coagulant per gallon of water will remove 99 per cent. of all germs contained in any water suitable for the source of a municipal supply. Unless the raw water is very highly contaminated or contains more than 20,000 germs per cubic centimeter, or 1,000 germs per drop, no appreciable increase of bacterial efficiency is obtained by increasing the amount of alum above one grain per gallon. But raw waters which contain as high as 1,000 germs per drop are never desirable sources of a drinking-water supply. When germs are so abundant in the water, they produce and leave in the water soluble toxins or physi-

ological poisons which the filter does not remove, and such toxins are likely to cause serious disturbance to health of water consumers.

The efficiency of a mechanical filter in use decreases rapidly by clogging of the sand. On this account the sand must be washed by a reverse current of water and air-blast every twelve to twenty-four hours. Once every three months the sand should be thoroughly washed out with a 5 per cent. solution of caustic soda.

The average small upland stream of North Carolina when sampled at least ten miles below any considerable sewage inflow, and while the water is normally clear, will show not more than 2,000 germs per cubic centimeter, or 100 germs per drop. To remove 99 per cent. of this germ contamination by the filter an average of less than one-half grain of alum per gallon is sufficient. In cultivated agricultural regions heavy rains invariably wash a considerable amount of surface soil into the streams, greatly increasing turbidity and bacterial content. These streams when turbid carry three or four times as much iron as when clear.

The customers of water companies demand not only that filtered water shall be practically germ-free, but shall also be to the eye silt free, and colorless. The average deep-well water has a turbidity of about 2.5, but turbidity of 4. is permissible in drinking-water. Numerous experiments by G. W. Fuller on the water of the Ohio River have shown that for the following degrees of turbidity the annexed amounts of sulphate of aluminum must be used to secure complete clarification:

Turbidity—Parts per Million of Silica.	Grains 17 Per Cent. Sulphate of Alum- inum per Gallon.	Pounds of Alum per Million Gallons of Water.	Required Alkalinity of Raw Water— Parts per Million.
10.	.75	107.14	7.
25.	1.25	178.56	12.
50.	1.50	214.27	15.
75.	1.95	278.56	19.
100.	2.20	314.27	22.
125.	2.45	339.98	24.
150.	2.65	378.55	26.
175.	2.85	407.12	28.
200.	3.00	428.57	30.
300.	3.80	542.85	38.
400.	4.40	618.56	44.
	6.00	857.08	60.
	8.00	1,142.78	80.
	10.00	1,428.48	100.



Since it is found that water may have a turbidity equivalent to 4 parts of silica per million without attracting unfavorable comment from consumers, in actual work the theoretical amounts of alum given in above table may be slightly decreased.

The cost of coagulant is the largest single item of expense in running a mechanical filter, and generally it will be found economical and desirable to subject to twenty-four hours' preliminary sedimentation all raw waters having turbidities above 70. Such sedimentation will alone remove two-thirds of the suspended matter. Aside from cost of alum, it must be remembered that its use increases the permanent hardness of the water, and in proportion makes the water less desirable for cooking, and for steam-boiler and laundry purposes. Where the turbidity of the raw water is below 25 it gives better results to add the coagulant only a few minutes before the water reaches the filter. With waters having a greater turbidity than 30 it will be found more satisfactory to add one-half or two-thirds of the coagulant to the water in settling-tank two or three hours previously and the rest just before the water reaches the filter.

Most upland waters are sufficiently colorless for all ordinary uses when the silt has been removed by coagulation arranged for that purpose alone. Not so, however, with the swamp pond and "branch" waters of the coastal plain. Such waters invariably carry a comparatively large amount of dissolved vegetable matter and iron which give to the water a color approximating to that of coffee. Coloration is more difficult to remove from water than either turbidity or bacteria. Water analysts now use for measuring the coloration of water an artificial standard formed by adding platinum-cobalt to distilled water. The results are recorded as water having color equivalent to 1, 2, 3, 5, 10, or more parts platinum-cobalt per million parts of water. The average pure well water of North Carolina has a color equivalent to  $12\frac{1}{2}$  parts of platinum-cobalt per million parts of water. This figure may be taken as the limit of color permissible in good drinking-water. Many pond and branch waters have a color equivalent to from 70 to 90 or more parts per million of platinum-cobalt. To reduce these highly colored waters to  $12\frac{1}{2}$  parts per million will require the use of 10 or more grains of alum per gallon. For decolorizing brown waters the coagulant should have six or more hours to act upon the water before it reaches the filter. As these deeply colored waters are invariably soft and of low alkalinity, large doses of alum are impracticable without a parallel addition of either lime or soda-ash, preferably the latter. Generally speaking, for each grain of 17 per cent. alum used per gallon of water, the raw water must receive one-half grain of carbonate of lime or its equivalent in soda-ash, in order to insure the complete decomposition of the alum and its removal from the water by the filter. The use of a dose of alum of 5 grains per gallon leaves in the water 48 parts per million of sulphates. On this account where deeply-colored waters are alone available it is better for consumers not to insist

upon complete decoloration. A color of 22½ on the platinum scale is not too high for such drinking-water.

The water as it flows from the filter should react alkaline to litmus-paper. Filtered waters containing undecomposed sulphate of aluminum are always acid. The acid of these waters attacks and dissolves the iron of water-pipes and steam-boilers often with disastrous results. Water impregnated with iron above 0.5 parts per million will cause "rust stains" in linen laundered in it. When drank, such water irritates the stomach and bowels.

In arranging for a public water supply the amount of water required per head and the decennial increase of population must be carefully considered and provided for. The average number of gallons of water per head per day consumed by 36 medium-sized English towns is 33. For similar sized German towns the average daily consumption is 28 gallons per head. A fair average for medium-sized American cities, excluding those notorious for reckless waste, is 100 gallons per head per day. Where water-meters are generally used and the consumption above a stated minimum is charged for by the gallon, the consumption tends to sink to less than 50 gallons per head without endangering either health or comfort of water consumers. The minimum of 50 gallons includes the average requirement of towns for manufacturing uses, street sprinkling, sewer flushing and fires. The reckless waste of water in many towns is clearly shown by comparing the consumption per head in two Southern cities having about the same class of population, namely:

Atlanta, Ga. (meters generally used).....	38 gallons.
Richmond, Va. (meters not used).....	167 gallons.

A necessary and important part of any public water plant is the clear-water basin or stand-pipe. This is intended to hold in reserve sufficient filtered water to provide for variation in rate of consumption and for emergencies such as a temporary stoppage of filter or the extra demand due to fire. Some water companies arrange to pump raw water directly into the mains in case of a serious fire requiring a large quantity of water. This proceeding is very dangerous and should never be permitted, since it is much easier to get pathogenic germs and troublesome algæ into the mains and service-pipes than to get rid of them. A disastrous epidemic might easily be caused by polluting the mains in this way. The reserve of filtered water should be ample to take care of any ordinary fire. Usually eight to ten hours' supply at the usual rate of consumption is considered a sufficient reserve. It is not desirable to hold an unnecessarily large reserve, because filtered water deteriorates rapidly when stale. The reserve basin or tank should be closely covered to exclude light, but must be ventilated in such a manner as to prevent entrance of atmospheric dust as well as birds and insects. Stored filtered water when exposed to light and air soon becomes contaminated by air-borne spores of algæ, molds and bacteria. These soon give the water a disagreeable odor and

taste. The more troublesome organisms found in water-tanks are various species of diatoms and algae, particularly *Protococcus*, *Scenedesmus*, and *Euglena*. Where for any reason the basin or tank cannot be covered, the best preventative of algal growth is treatment of the water with sulphate of copper. This is the well-known "bluestone" used in making the Bordeaux mixture so extensively used in spraying orchards and gardens. Use one part of copper sulphate per million parts water—about one and one-tenth ounces per 10,000 gallons. This amount of copper sulphate is wholly inappreciable to sight and taste and will in no wise injure the water for domestic or industrial use. A larger dose than above mentioned is, however, not recommended. The water need be treated but once, and this should be done while it is still fresh.

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## REVIEW OF DISEASES FOR JANUARY, 1907.

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### SEVENTY-FIVE COUNTIES REPORTING.

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• Ninety-four counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of January the following diseases have been reported from the counties named:

MEASLES—Alamance, 1 case; Alexander, 20; Ashe, 60; Cabarrus, 75; Camden, epidemic; Caswell, several; Catawba, many; Chatham, 1; Cleveland, a few; Craven, 1; Cumberland; Currituck, many; Durham, a few; Edgecombe, 4; Franklin, 1; Granville, 10; Guilford, 1; Halifax, a few; Haywood, several; Iredell, 40; Johnston, 4; Lincoln, several; Madison, in all parts; Mecklenburg; Nash, many; Northampton, many; Onslow; Pasquotank, epidemic; Perquimans, 12; Robeson, a few; Surry, 10; Vance, a few; Wilkes, 25; Yadkin, many—34 counties.

WHOOPING-COUGH—Alexander, 3; Ashe, 100; Bertie, 1; Caswell, several; Cleveland, several; Craven, a few; Cumberland; Davidson, several; Davie, many; Duplin, 8; Granville, 8; Halifax, a few; Henderson, 4; Hertford, 20; Mecklenburg; Montgomery, 5; Northampton, many; Randolph, 3; Surry, 10; Wilkes, 10—21 counties.

SCARLATINA—Alexander, 4; Buncombe, 5; Caldwell, 3; Davidson, 5; Gaston, 1; Iredell, 1; Mecklenburg; Montgomery, 1; Nash, 3; Rowan, 2; Surry, 5; Wake, 8; Wilkes, 3—13 counties.

DIPHTHERIA—Alexander, 3; Cabarrus, 1; Caldwell, 2; Davie, 1; Duplin, 3; Durham, 1; Forsyth, 3; Guilford, 2; Martin, 9; Mecklenburg; New Hanover, 2; Orange, 2; Pender, 1; Rowan, 2; Union, 1; Wake, 2—16 counties.

TYPHOID FEVER—Alamance, 2; Alexander, 2; Ashe, 2; Bladen, 3; Brunswick, 2; Burke, 2; Cumberland; Davidson; Edgecombe, 3; Graham, 2; Greene, 1; Henderson, 2; Lincoln, 1; Madison; Mecklenburg; Montgomery, 2; New Hanover, 4; Onslow; Orange, 1; Randolph, 3; Sampson, a few; Surry, 1; Wake, 5; Wilkes, 1; Yadkin, 3; Yancey, a few—18 counties.

MALARIAL FEVER—Edgecombe, Halifax, Onslow, Wake.

MALARIAL FEVER, PERNICIOUS—Halifax.

MALARIAL FEVER, HEMORRHAGIC—Camden, Perquimans, Wake.

CEREBRO-SPINAL MENINGITIS—Union, 2.

INFLUENZA—Alamance; Brunswick; Camden, in all parts; Caswell, in all parts; Cherokee, in all parts; Currituck; Graham, in all parts; Guilford, in all parts; Halifax; Hertford, in all parts; Johnston, in all parts; Lincoln; Montgomery; New Hanover; Pender; Perquimans, in all parts; Person; Randolph; Richmond, in all parts; Robeson; Rowan; Sampson, in all parts; Scotland; Union, in all parts; Washington, in all parts; Wilkes; Yadkin; Yancey, in all parts—28 counties.

PNEUMONIA—Alamance, 3; Alexander, 21; Alleghany, in all parts; Bertie, 3; Bladen, 13; Brunswick, 1; Camden, 14; Caswell, 7; Chatham, 1; Currituck, a few; Davidson; Davie, a few; Durham; Edgecombe, 1; Forsyth, a few; Franklin, several; Gaston, 8; Graham, 1; Green, 3; Guilford, in all parts; Halifax; Henderson, several; Hertford, 4; Iredell, 5; Johnston, in all parts; Jones, 4; Lincoln, 10; Madison, Martin; Montgomery, 2; New Hanover, a few; Northampton; Onslow; Perquimans, in all parts; Person; Randolph, 2; Richmond, several; Robeson, several; Rowan, a few; Sampson, many; Scotland; Union, several; Wake, 27; Washington, 3; Wilkes, 5; Wilson, several; Yadkin, 4; Yancey, in all parts—48 counties.

MUMPS—Currituck, Gaston.

TONSILLITIS—Currituck.

SMALLPOX—Alamance, 6; Anson, 3; Ashe, 4; Bertie, 1; Catawba, 1; Chatham, 6; Cumberland, 1; Durham, 55; Franklin, 7; Gaston, 4; Guilford, 2; Halifax, 2; Hertford, 10; Johnston, 3; Jones, 1; Northampton, 1; Randolph, 9; Richmond, 5; Rutherford, 4; Union, 1; Vance, 1; Wake, 88; Wayne, 4—23 counties.

CHOLERA, IN HOGS—Cherokee, Sampson.

DISTEMPER, IN HORSES—Burke, Montgomery, Sampson.

MURRAIN, IN CATTLE—Ashe.

No diseases reported from McDowell, Pitt, Polk, and Swain.

No reports received from Beaufort, Carteret, Chowan, Clay, Columbus, Dare, Gates, Harnett, Hyde, Jackson, Lenoir, Macon, Mitchell, Moore, Pamlico, Rockingham, Stanly, Transylvania, Warren, and Watauga.

## SUMMARY OF MORTUARY REPORTS FOR JANUARY, 1907.

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 TWENTY TOWNS.
 

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	<i>White.</i>	<i>Col'd.</i>	<i>Total.</i>
Aggregate population .....	113,450	71,250	184,700
Aggregate deaths .....	112	130	242
Representing temporary annual death rate per 1,000 .....	11.8	21.9	15.7
<i>Causes of Death.</i>			
Typhoid fever.....	1	0	1
Malarial fever .....	0	1	1
Diphtheria.....	4	1	5
Whooping-cough.....	0	1	1
Measles.....	1	1	2
Pneumonia.....	8	27	35
Consumption.....	12	22	34
Brain diseases .....	10	7	17
Heart diseases .....	9	11	20
Neurotic diseases .....	0	1	1
Diarrhœal diseases .....	4	1	5
All other diseases .....	51	51	102
Accident.....	9	5	14
Suicide.....	2	1	3
Violence.....	1	0	1
	<hr/>	<hr/>	<hr/>
	112	130	242
Deaths under 5 years .....	21	44	65
Still-born.....	6	22	28

**Mortuary Report for January, 1907.**

TOWNS AND REPORTERS.	RACES.	POPULA- TION.		TEM- PORARY ANNUAL DEATH- RATE PER 1,000.		Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.	Diarrheal Diseases.	All Other Diseases.	Accident.	Suicide.	Violence.	TOTAL DEATHS.		
		By Races.	Total.	By Races.	Total.																	By Races.	By Towns.	Deaths under five years. Still-born.
Charlotte .....	W.	18,000	30,000	8.7	11.2	.....	.....	1	.....	1	3	1	.....	.....	.....	.....	.....	6	1	.....	13	28	5	4
Dr. F. O. Hawley.	C.	12,000		17.5		.....	.....	1	.....	.....	2	1	.....	3	.....	.....	.....	7	1	.....	15	25	2	2
Durham .....	W.	12,000	18,000	23.0	16.7	.....	.....	1	.....	.....	.....	.....	2	1	1	.....	3	9	4	.....	18	25	3	1
Dr. N. M. Johnson.	C.	6,000		14.0		.....	.....	.....	.....	.....	1	4	.....	.....	.....	.....	.....	2	.....	.....	7	3	3	3
Elizabeth City .....	W.	6,000	10,000	14.0	23.2	.....	.....	.....	.....	1	.....	1	.....	.....	.....	.....	.....	4	1	.....	7	16	2	.....
Dr. H. D. Walker.	C.	4,000		27.0		.....	.....	.....	.....	.....	2	1	2	.....	.....	.....	.....	4	.....	.....	9	3	5	.....
Fayetteville .....	W.	3,500	6,000	17.1	16.0	.....	.....	.....	.....	1	.....	2	.....	.....	.....	.....	.....	2	.....	5	8	3	.....	
Dr. A. S. Rose.	C.	2,500		14.4		.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	1	.....	.....	3	5	8	.....
Greensboro .....	W.	10,000	15,000	8.4	14.0	.....	.....	.....	.....	.....	1	1	1	.....	.....	.....	.....	4	.....	.....	7	15	2	.....
Dr. Edmund Harrison.	C.	5,000		19.2		.....	.....	.....	.....	1	2	1	.....	.....	.....	.....	.....	4	.....	.....	8	6	2	.....
Henderson .....	W.	2,000	4,300	12.0	19.5	.....	.....	1	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	2	7	1	.....
Dr. G. A. Coggeshall.	C.	2,300		26.1		.....	.....	.....	.....	.....	1	1	.....	.....	.....	.....	.....	2	1	.....	5	7	1	.....
High Point .....	W.	7,500	9,400	14.4	15.3	.....	.....	.....	.....	.....	.....	.....	1	1	.....	.....	.....	4	1	1	1	9	12	1
Dr. C. A. Reitzel.	C.	1,900		18.9		.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	1	1	.....	3	12	1	.....
Marion .....	W.	1,500	1,600	8.0	7.5	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	1	.....	.....
Dr. B. L. Ashworth.	C.	100		0.0		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0	1	.....	.....
Oxford .....	W.	1,500	3,000	32.0	20.0	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	2	1	.....	4	5	1	.....
Dr. S. D. Booth.	C.	1,500		8.0		.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Raleigh .....	W.	9,000	16,000	10.7	20.2	.....	.....	.....	.....	.....	.....	.....	2	1	.....	.....	.....	4	1	.....	8	27	.....	.....
T. P. Sale, Clerk B. H.	C.	7,000		32.6		.....	.....	1	.....	3	4	3	2	1	.....	.....	.....	4	1	.....	19	27	8	2
Rocky Mount .....	W.	3,000	4,900	4.0	4.9	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	2	1	.....
Dr. L. C. Covington.	C.	1,900		6.3		.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Salem .....	W.	3,400	3,800	17.7	18.9	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	5	.....	.....	5	6	.....	.....
S. E. Butner, Supt. H.	C.	400		30.0		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	6	1	.....
Salisbury .....	W.	7,400	11,000	6.5	6.5	.....	.....	1	.....	.....	1	1	.....	.....	.....	.....	.....	1	.....	.....	4	6	1	1
Dr. H. T. Trantham.	C.	3,600		6.7		.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	1	.....	.....	2	6	1	1
Southport .....	W.	900	1,400	26.7	14.3	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	2	2	.....	.....
Dr. J. A. Doshier.	C.	500		0.0		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0	.....	.....	.....
Tarboro .....	W.	2,500	3,500	9.6	10.3	1	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	2	3	.....	.....
Dr. S. N. Harrell.	C.	1,000		12.0		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	1	.....
Wadesboro .....	W.	1,200	2,000	10.0	6.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	1	1	.....	.....
Dr. J. H. Bennett.	C.	800		0.0		.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0	.....	.....	.....
Washington .....	W.	3,500	6,500	24.0	25.8	.....	.....	.....	.....	.....	.....	.....	1	1	1	.....	1	3	.....	.....	7	14	1	.....
Dr. John G. Blount.	C.	3,000		28.0		.....	.....	.....	.....	.....	3	.....	.....	.....	.....	.....	.....	1	2	1	.....	7	5	.....
Weldon .....	W.	750	1,500	0.0	8.0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0	1	.....	.....
J. T. Gooch, Mayor.	C.	750		16.0		.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....
Wilmington .....	W.	16,000	30,000	13.1	20.4	.....	.....	.....	.....	.....	.....	.....	2	2	2	1	.....	7	.....	1	15	51	1	.....
Dr. Charles T. Harper.	C.	14,000		30.8		.....	1	.....	.....	9	5	2	3	.....	16	.....	.....	.....	.....	.....	36	11	7	.....
Wilson .....	W.	3,800	6,800	6.3	21.2	.....	.....	.....	.....	.....	.....	.....	1	.....	.....	.....	.....	1	.....	.....	2	12	1	.....
Dr. W. S. Anderson.	C.	3,000		40.0		.....	.....	.....	.....	.....	3	2	.....	.....	.....	.....	.....	5	.....	.....	10	4	.....	.....

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the *whole* number of deaths occurring within the corporate limits during the above month."

## County Superintendents of Health.

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Alamance .....	Dr. George W. Long.	Jones.....	
Alexander .....	Dr. O. L. Hollar.	Lenoir .....	Dr. C. L. Pridgen.
Alleghany .....	Dr. B. E. Reeves.	Lincoln .....	Dr. R. W. Petrie.
Anson .....	Dr. J. H. Bennett.	McDowell .....	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon .....	Dr. F. L. Siler.
Beaufort .....	Dr. John G. Blount.	Madison .....	Dr. W. J. Weaver.
Bertie .....	Dr. H. V. Dunstan.	Martin.....	Dr. W. E. Warren.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin
Brunswick .....	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe .....	Dr. D. E. Sevier.	Montgomery .....	Dr. J. B. Shamburger.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod.
Cabarrus.....	Dr. R. S. Young.	Nash .....	Dr. J. P. Battle.
Caldwell .....	Dr. C. L. Wilson.	New Hanover .....	Dr. W. D. McMillan.
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret .....	Dr. F. M. Clarke.	Onslow.....	Dr. Cyrus Thompson.
Caswell .....	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba .....	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. J. H. Taylor.	Pasquotank .....	Dr. J. B. Griggs.
Cherokee.....	Dr. J. A. Abernathy.	Pender.....	Dr. Robt. H. Bradford.
Chowan.....	Dr. T. J. Hoskins.	Perquimans .....	Dr. C. C. Winslow.
Clay .....	Dr. J. M. Sullivan.	Person .....	Dr. J. A. Wise.
Cleveland .....	Dr. B. H. Palmer.	Pitt.....	Dr. Joseph E. Nobles.
Columbus.....	Dr. H. B. Maxwell.	Polk .....	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph .....	Dr. A. M. Bulla.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. L. D. McPhail.
Currituck .....	Dr. H. M. Shaw.	Robeson.....	Dr. H. T. Pope.
Dare .....	Dr. W. B. Fearing.	Rockingham .....	Dr. Sam Ellington.
Davidson .....	Dr. Joel Hill.	Rowan.....	Dr. I. H. Foust.
Davie .....	Dr. M. D. Kimbrough.	Rutherford.....	Dr. E. B. Harris.
Duplin .....	Dr. A. J. Jones.	Sampson .....	Dr. J. O. Matthews.
Durham .....	Dr. T. A. Mann.	Scotland .....	Dr. A. W. Hamer.
Edgecombe .....	Dr. S. N. Harrell.	Stanly.....	Dr. J. N. Anderson.
Forsyth.....	Dr. S. F. Pfohl.	Stokes .....	
Franklin .....	Dr. R. F. Yarborough.	Surry .....	Dr. John R. Woltz.
Gaston.....	Dr. L. N. Glenn.	Swain.....	Dr. R. L. Davis.
Gates.....	Dr. W. O. P. Lee.	Transylvania .....	Dr. C. W. Hunt.
Graham .....	Dr. M. T. Maxwell.	Tyrrell.....	
Granville .....	Dr. S. D. Booth.	Union .....	Dr. Henry D. Stewart.
Greene.....	Dr. W. B. Murphy.	Vance.....	Dr. John Hill Tucker.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. W. McGee, Jr.
Halifax .....	Dr. I. E. Green.	Warren.....	Dr. P. J. Macon.
Harnett.....	Dr. L. J. Arnold.	Washington .....	Dr. W. H. Ward.
Haywood .....	Dr. J. R. McCracker.	Watauga.....	Dr. H. McD. Little.
Henderson .....	Dr. J. G. Waldrop.	Wayne.....	Dr. J. B. Outlaw.
Hertford .....	Dr. C. F. Griffin.	Wilkes.....	Dr. John Q. Myers.
Hyde.....	Dr. E. H. Jones.	Wilson.....	Dr. W. S. Anderson.
Iredell .....	Dr. M. R. Adams.	Yadkin .....	Dr. M. A. Rovall.
Jackson.....	Dr. William Self.	Yancey .....	Dr. J. B. Gibbs.
Johnston .....	Dr. Thel Hooks.		





[You are asked to fill out and mail one of these forms to the Superintendent of Health of your county on or before the third of each month, that he may use it in making his report to the Secretary of the State Board.]

Have any of the following diseases occurred in your practice during the month just closed? If so, state number of cases.

Whooping-cough ----- Typhoid Fever -----

Measles ----- Typhus Fever -----

Diphtheria ----- Yellow Fever -----

Scarlet Fever ----- Cholera -----

Pernicious Malarial Fever ----- Smallpox -----

Hemorrhagic Malarial Fever ----- Cerebro-spinal Meningitis -----

What have been the prevailing diseases in your practice?

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Has any epidemic occurred among domestic animals? If so, what?

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What is the sanitary condition of your section, public and private?

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General Remarks: -----

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----- M. D.



# BULLETIN

OF THE

## NORTH CAROLINA BOARD OF HEALTH

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*Published Monthly at the Office of the Secretary of the Board, Raleigh, N. C.*

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GEO. G. THOMAS, M. D., <i>Pres.</i> , Wilmington.	T. E. ANDERSON, M. D.,--Statesville.
S. WESTRAY BATTLE, M. D.,--Asheville.	J. HOWELL WAY, M. D.,--Waynesville.
HENRY W. LEWIS, M. D.,-----Jackson.	W. O. SPENCER, M. D.,-----Winston-Salem.
W. P. IVEY, M. D.,-----Lenoir.	J. L. LUDLOW, C. E.,-----Winston-Salem.
RICHARD H. LEWIS, M. D., <i>Secretary and Treasurer</i> , Raleigh.	

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VOL. XXI.

MARCH, 1907.

No. 12.

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### SURFACE WATERS AS SOURCES OF PUBLIC SUPPLIES.

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By GERALD MCCARTHY, Biologist, State Laboratory of Hygiene.

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A "Public Water Supply" as herein treated of is any supply furnished by a system of pipes for the use of citizens generally, whether owned by an individual, corporation, or municipality.

The principal use and value of a public water supply is for human consumption. But most cities and towns also use the public supply for furnishing water for steam-boilers, laundries, and other industrial purposes, as well as for sprinkling streets and lawns.

A high degree of purity is absolutely required only for drinking water, and where such pure water is scarce or expensive to procure a lower grade may be used for purposes other than human consumption. But for sanitary reasons it is undesirable for a town or city to have more than one public distributing system, or more than one quality of water for general use. This quality should therefore be the highest attainable.

A wholesome and satisfactory public water supply must have the following qualifications:

1. It must be entirely free from micro-organisms of the fecal or sewage group.
2. It must be entirely free from deleterious minerals and metals.

3. It must not carry above a stated maximum of dissolved mineral and organic matters.

4. It must be clear, colorless, odorless, and preferably soft.

It may be said at once, that except in mountain regions, where small streams can be tapped near their heads, or in a region of primeval forests, no unfiltered surface water can meet all the above requirements; therefore surface water supplies should as a rule be filtered.

In North Carolina, except near the coast, the only available sources of public water supplies are small streams and deep wells. In this paper we shall discuss only streams.

The sanitary quality of the water of any stream depends upon several factors:

(1) Upon the population of the water-shed: The population should as a rule not exceed 200 per square mile of water-shed or catchment basin.

(2) Upon the character and condition of the surface soil and out-cropping rock: Swampy soils give a dark-colored water, usually containing iron and vegetable matter in excess. Limestone soils give a very hard water unsuitable for many domestic purposes. Granitic and sandstone soils usually give a soft, clear water suitable for all purposes. Grassy and wooded areas give a cleaner and brighter water than cultivated areas.

(3) Upon liability of the main stream or its up-stream tributaries to pollution by wastes from mills, mines, or sewered towns: In cases of manufacturing centers and large commercial towns, some pollution of neighboring surface streams is inevitable, but this necessary evil should be reduced to the lowest possible quantity.

Fecal pollution is the most serious menace to the safety of a water supply, since the chief—practically the only—disease-producing organisms found in surface waters belong to the group whose normal habitat is the human bowels. The danger of polluting the source of a water supply can be largely guarded against by the town which owns the supply buying up the part of water-shed adjoining the stream. This land, if planted in timber trees, will eventually become very valuable, and will finally more than repay its cost. When such ownership of water-shed is impracticable, recourse must be had to strict sanitary patrolling and inspection at intervals of not more than fifteen days. Dwellers on the water-shed should be compelled to disinfect fecal discharges with chloride of lime or sulphate of copper before such discharges are emptied upon the ground. No public water supply can be properly safe-guarded unless the water is sampled systematically at intervals of not more than one month, and submitted for analysis to a competent bacteriologist. Chemical analysis alone is not sufficient in this case, as chemical reactions are not sufficiently delicate nor are they suitable for detecting the pres-

ence of dangerous germs. A combination of the biological and chemical methods gives the best results.

North Carolina has but little lime or calcareous soils. Hence the surface waters are usually soft. These waters are, however, especially in rainy periods, likely to contain an excess of iron, which is injurious unless the iron is removed by aeration and filtration. Filtration by the mechanical process, when properly conducted, suffices to make any of these surface waters palatable and wholesome.

In establishing a water supply system, next to determining the sanitary quality of the water from any proposed source, the most important point is to determine the quantity of available water, or the "run-off" of the catchment basin. In this connection the seasonal as well as the annual rainfall must be fully considered. In North Carolina, excluding the immediate coast fringe, the average rainfall is about 50 inches annually and is pretty evenly distributed over the four seasons. The following figures represent the rainfall in inches as given in the "Climatology of North Carolina":

District.	Spring.	Summer.	Fall.	Winter.	Year.
Western -----	13.69	14.95	10.65	14.07	53.32
Central -----	12.18	13.99	11.35	12.28	49.85
Eastern -----	12.94	17.04	13.10	12.24	55.23
State -----	12.94	15.87	11.71	12.77	53.29

Of the total rainfall on the average from 40 to 50 per cent. appears in the streams as "run-off." From 15 to 25 per cent. percolates into the soil—where the soil is deep sand, 50 per cent. or more of the rainfall may disappear into the ground. The remainder is directly evaporated back into the atmosphere. Some part of the percolating ground water returns to the surface in form of springs or seepage and enters the stream run-off, and a part is taken up by the roots of growing vegetation and sent back into the atmosphere as transpired moisture.

For practical purposes, however, to determine the available water in any stream the average and minimum volumes of the stream in question must be learned from actual and repeated measurements. The volume of a stream at any time and place can be fairly approximated by selecting a straight reach of the stream and measuring the depth and width of the water. Then from a point 100 feet upstream let a chip flow, and note the time required to pass over the hundredth-foot distance. Multiply the cross section of the stream in square feet by .8 of the velocity in feet per second. The results are figured as cubic feet of water per second, or, using a special unit, the flow is calculated into "second-feet." A "second-foot" is one cubic

foot per second passing a given point. One cubic foot of water per second flows in 24 hours 86,400 cubic feet, equivalent to about 11,554 gallons. Hydraulic engineers also use the unit "second-feet per square mile," meaning the number of cubic feet of water per second running off each square mile of the catchment area—assuming that the run-off is uniform.

The quantity of water a municipal system must supply daily can be safely figured as something less than 100 gallons per head of population. When consumers are charged meter rates and leakage guarded against, the consumption is not likely to exceed 60 gallons per head. The actual water requirements of the human body in health is about five pints per day. In country neighborhoods where water for the household has to be carried some distance in buckets, the average consumption per day rarely exceeds 4 gallons per head.

For the purpose of a public water supply, the seasonal variation and the minimum flow of a stream is of more importance than either the maximum or general average flows. The maximum or flood flow has little direct bearing on the question. If the minimum flow is insufficient to furnish the necessary daily consumption during periods of drought, and no other source is available, recourse must be had to storing the surplus water in periods of maximum flow against periods of scarcity. A storage pond should have a clean bottom and as a rule should not contain a greater depth of water than 25 feet. According to figures given by Mr. Desmond Fitzgerald of the Boston Water-works, the greatest amount of water per square mile of catchment area that can be made available by storage in a locality having an annual, but non-uniform, rainfall of 48-52 inches, is about 750,000 gallons per day. For practical purposes a water system which includes a large storage reservoir may be considered under the type of pond supplies.

Ponds, either natural or artificial, when protected from pollution, may be made sources of a wholesome water supply. Mr. Fitzgerald gives the following figures as to the available supply from ponds in localities having an annual rainfall of 48-52 inches: area of pond, 0.15 square mile, depth sufficient to give a volume of 225,000,000 gallons; catchment basin,  $1\frac{1}{2}$  square miles; yield of water per day, 660,000 gallons per square mile of basin, or 990,000 gallons for the total given area. For a daily consumption of 700,000 gallons per square mile of basin the volume of storage capacity must be about 112,000,000 gallons. For 800,000 gallons consumption the storage capacity must be 228,000,000 gallons. For 1,000,000 gallons daily consumption per square miles of basin, the storage capacity must be 523,700,000 gallons.

The sanitary quality of water from any natural pond in North Carolina—not polluted by mill wastes and not having on its water-shed a population greater than 200 per square mile—is likely to be good; but in the eastern section pond waters are invariably deeply colored and

contain iron in excess. Brown peaty waters are unable to harbor living typhoid or cholera germs for more than twenty-four hours.

From the latest available data furnished by the United States Geological Survey, we abstract the following figures of discharge of catchment basin for some North Carolina streams:

## STATISTICS OF NORTH CAROLINA STREAMS.

Stream.	Place of Observation.	Drainage Area in Square Miles.	Year of Observation.	Mean Annual Discharge Per Second in Cubic Feet.	Run-off in Second-feet Per Square Mile.	Annual Run-off in Inches Per Square Mile.
Ararat-----	Siloam-----		1905	406.		
Cape Fear-----	Fayetteville--	4,493	1902	3,763.	0.84	11.21
Catawba-----	Morganton---	758	1903	881.	1.59	21.0
Dan-----	Madison-----		1905	818.		
Davidson-----	Davidson-----	41	1905	107.	2.06	35.34
French Broad---	Asheville-----	987	1904	2,187.	2.22	30.18
John River-----	Morganton---	213	1905	275.		
Hiwassee-----	Murphy-----	410	1903	1,115.	2.72	36.59
Little River-----	Calhoun-----	59	1905	213.5		
Little Tennessee--	Judson-----	675	1904	1,112.	1.65	22.4
Mayo-----	Madison-----	24	1905	351.		
North Mills-----	Pinkbed-----	24	1905	62.	2.59	35.2
Neuse-----	Raleigh-----	1,000	1904	2,000.	2.25	
Nottley-----	Ranger-----	272	1903	588.	2.16	29.13
Pigeon-----	Waynesville---		1905	432.	1.65	22.31
Reddie-----	N.Wilkesboro---		1905	111.	1.	
Roanoke-----	Neal-----	8,717	1903	26,284.	3.01	40.48
Roaring River---	Roaring River	137	1905	132.		
Swannanoa-----	Biltmore-----	124	1905	182.		
Tuckaseegee-----	Bryson-----	662	1904	974.	1.47	20.03
Yadkin-----	Salisbury-----	3,399	1905	4,539.	1.34	18.13
Yadkin-----	N.Wilkesboro---	498	1903	850.	1.71	22.28

## REVIEW OF DISEASES FOR FEBRUARY, 1907.

### SEVENTY-SIX COUNTIES REPORTING.

Ninety-four counties have Superintendents of Health.

Except in the case of the more contagious and dangerous diseases, the Superintendent has, as a rule, to rely upon his own information alone, since few physicians can be induced to report cases of non-contagious diseases to him.

Where the number of cases is not given, or the prevalence of a disease otherwise indicated, its mere presence in the county is to be understood as reported.

For the month of February the following diseases have been reported from the counties named:

**MEASLES**—Alexander, 4 cases; Beaufort; Cabarrus, 25; Camden, epidemic; Caswell, 75; Catawba, many; Cleveland, a few; Cumberland; Currituck, many; Durham, a few; Edgecombe, many; Forsyth, a few; Gaston, several; Guilford, 2; Haywood, many; Henderson, 6; Hertford, many; Iredell, 30; Johnston, several; Madison, in all parts; Martin, a few; Mecklenburg; Nash, many; Northampton, many; Pasquotank, epidemic; Pender, a few; Randolph, 2; Robeson, many; Surry, epidemic; Wake, 2; Warren, epidemic; Wilkes, several; Yadkin, many—33 counties.

**WHOOPING-COUGH**—Beaufort; Caswell, 50; Chowan, several; Cleveland, several; Craven, many; Cumberland; Davidson; Davie, many; Duplin, 2; Durham; Edgecombe, many; Forsyth, a few; Granville, general; Harnett, general; Hertford, many; Martin, several; Mecklenburg; Northampton; Randolph, 3; Surry, 5; Transylvania, a few; Wilkes, several—22 counties.

**SCARLATINA**—Buncombe, 3; Caldwell, 3; Gaston, 1; Iredell, 1; Nash, 3; Surry, 1; Yancey, 2—7 counties.

**DIPHTHERIA**—Brunswick, 1; Carteret, 1; Craven, 1; Duplin, 3; Edgecombe, 1; Guilford, 1; Iredell, 1; Nash, 3; Rowan, 1; Rutherford, 2; Union, 1—11 counties.

**TYPHOID FEVER**—Alexander, 1; Brunswick, 2; Cumberland; Edgecombe, a few; Gaston, 1; Granville, 1; Greene, 1; Harnett, 3; McDowell, 1; Mecklenburg; Nash, 3; New Hanover, 13; Onslow, several; Pender, 1; Randolph, 1; Robeson, a few; Sampson, a few; Surry, 1; Wake, 3; Yadkin, 1; Yancey, 1—21 counties.

**MALARIAL FEVER**—Edgecombe; Hyde, a great many; Northampton; Onslow.

**MALARIAL FEVER, HEMORRHAGIC**—Northampton, 1; Onslow.

**MUMPS**—Hertford, in all parts; Northampton.



INFLUENZA—Alleghany; Bertie, general; Brunswick; Burke; Camden; Carteret; Caswell, general; Catawba; Cherokee, epidemic; Craven; Currituck; Davidson; Davie, general; Forsyth; Gaston; Graham; Granville; Harnett; Haywood; Henderson; Hertford; Hyde; Johnston; Lincoln; Madison; Montgomery; Pender, general; Perquimans; Randolph, epidemic; Richmond; Robeson, general; Rowan; Rutherford; Scotland; Surry; Transylvania; Union; Wake; Warren; Washington; Wilkes, general; Yadkin; Yancey, general—43 counties.

PNEUMONIA—Alamance; Alexander, 20; Alleghany, many; Bladen, 5; Brunswick, 8; Burke, many; Cabarrus, 5; Camden, 14; Carteret, several; Caswell, 25; Catawba, 8; Chowan, 15; Craven; Cumberland; Currituck, several; Davidson; Davie, several; Durham, many; Edgecombe, many; Forsyth, a few; Gaston, many; Green, 5; Harnett, 32; Hertford, 16; Hyde, 7; Iredell, in all parts; Johnston, 3; Lincoln, several; McDowell, 1; Martin, several; Mecklenburg; Montgomery, 20; Nash, 4; New Hanover, a few; Northampton, many; Onslow, several; Pender, 2; Perquimans; Randolph, 5; Richmond, many; Robeson, a few; Rowan, many; Scotland, in all parts; Surry; Transylvania, several; Union, several; Wake, 77; Warren, in all parts; Wayne, 7; Wilkes, several; Yadkin, 2; Yancey, in all parts—52 counties.

CEREBRO-SPINAL MENINGITIS—Camden, 1; Caswell, 3; Davie, 1; Randolph, 1.

GERMAN MEASLES—Union, many.

SMALL-POX—Alamance, 11; Anson, 8; Chowan, 50; Cleveland, 3; Currituck, 1; Duplin, 3; Durham, 21; Gaston, 2; Granville, 1; Guilford, 4; Harnett, 10; Hertford, 8; Hyde, 1; Mecklenburg, 1; Northampton, 2; Randolph, 18; Richmond, 1; Wake, 39; Wayne, 5—19 counties.

CHOLERA, IN CHICKENS—Davie.

CHOLERA, IN HOGS—Sampson.

DISTEMPER, IN HORSES—Burke; Montgomery.

No diseases reported from Orange, Pitt, Polk, Swain, Vance, and Wilson.

No reports received from Ashe, Chatham, Clay, Columbus, Dare, Franklin, Gates, Halifax, Jackson, Jones, Lenoir, Macon, Mitchell, Moore, Pamlico, Rockingham, Stanly, and Watauga.

## SUMMARY OF MORTUARY REPORTS FOR FEBRUARY, 1907.

## TWENTY-THREE TOWNS.

	<i>White.</i>	<i>Col'd.</i>	<i>Total.</i>
Aggregate population .....	126,050	81,350	207,400
Aggregate deaths .....	150	173	323
Representing temporary annual death-rate per 1,000 .....	14.3	25.5	18.7
<i>Causes of Death.</i>			
Typhoid fever .....	2	1	3
Scarlet fever .....	1	0	1
Malarial fever .....	1	3	4
Diphtheria . . . . .	1	0	1
Whooping-cough . . . . .	2	1	3
Measles . . . . .	0	2	2
Pneumonia . . . . .	19	42	61
Consumption . . . . .	18	26	44
Brain diseases .....	12	9	21
Heart diseases .....	15	10	25
Neurotic diseases .....	3	6	9
Diarrhœal diseases .....	5	3	8
All other diseases .....	66	61	127
Accident . . . . .	4	5	9
Violence . . . . .	1	4	5
	<hr/> 150	<hr/> 173	<hr/> 323
Deaths under five years old. ....	37	43	80
Still-born . . . . .	11	15	26

## Mortuary Report for February, 1907.

TOWNS AND REPORTERS.	RACES.	POPULA- TION.		TEM- PORARY ANNUAL DEATH- RATE PER 1,000.														TOTAL By Races, By Towns, Deaths, Deaths under five years, Still-born.				
		By Races.	Total.		By Races.	Total.	Typhoid Fever.	Scarlet Fever.	Malarial Fever.	Diphtheria.	Whooping-cough.	Measles.	Pneumonia.	Consumption.	Brain Diseases.	Heart Diseases.	Neurotic Diseases.		Diarrhoal Diseases.	All Other Diseases.	Accident.	Suicide.
Charlotte	W.	18,000	30,000	12.7	16.4		1				1	1		2	1	12	1			19	5	3
Dr. F. O. Hawley.	C.	12,000		22.0			1					5	3		1		11	1			22	41
Durham	W.	12,000	18,000	15.0	26.0						6	1	1		6		1	15	39	2	1	
Dr. N. M. Johnson.	C.	6,000		48.0				1			8	5		1			8					124
Edenton	W.	1,400	4,000	0.0	15.0						3				2					0	5	
Dr. Thomas J. Hoskins	C.	2,600		23.1																		5
Elizabeth City	W.	6,000	10,000	20.0	36.0		1				2	3			4			10	30	7	1	
Dr. H. D. Walker.	C.	4,000		60.0						1	2	4	3	1			9			20	8	1
Fayetteville	W.	3,500	6,000	10.3	16.0						1	1	2		1			3	8		1	
Dr. A. S. Rose.	C.	2,500		24.0													1			5		
Greensboro	W.	10,000	15,000	15.6	17.6						1	4	1	1	5	1		13	22	4	2	
Dr. Edmund Harrison.	C.	5,000		21.6								3				1	3	1		1	9	3
Henderson	W.	2,000	4,300	12.0	16.7						3	1	1					2	6	1		
Dr. G. A. Coggeshall.	C.	2,300		20.9																		
High Point	W.	7,500	9,400	14.4	20.4	1	1				1			1	1	4		9	16	3		
Dr. C. E. Reitzel.	C.	1,900		44.2								2	1				2		2	7		
Lexington	W.	3,000	3,600	4.0	3.3										1			1	1	1		
J. H. Moyer, Mayor.	C.	600		0.0																0		
Marion	W.	1,400	1,500	17.1	16.0									2				2	2			
Dr. B. L. Ashworth.	C.	100		0.0																0		
Oxford	W.	1,700	3,200	7.0	3.7										1			1	1			
Dr. S. D. Booth.	C.	1,500		0.0																0		
Raleigh	W.	9,000	16,000	26.7	21.0						1	3	2	1	12	1		20	28	3	2	
T. P. Sale, Clerk B. H.	C.	7,000		13.7								3	1				2	2		8	5	6
Rocky Mount	W.	3,000	4,900	8.0	9.8	1									1			2	4			
Dr. L. C. Covington.	C.	1,900		12.6						1	1									2	1	
Salem	W.	3,400	3,800	10.6	9.5									1		2		3	3	1		
S. E. Butner, Supt. H.	C.	400		0.0																0		
Salisbury	W.	7,400	11,000	16.2	17.4						5	1	3	1				10	16			
Dr. H. T. Trantham.	C.	3,600		20.0								3	1				2			6	1	
Southport	W.	900	1,400	13.3	17.1						1							1	2	1		
Dr. J. A. Doshier.	C.	500		24.0										1						1		
Tarboro	W.	2,500	3,500	14.4	24.0								1	1	1			3	7			
Dr. S. N. Harrell.	C.	1,000		48.0								2					1	1		4		
Wadesboro	W.	1,200	2,000	10.0	12.0										1			1	2			
Dr. J. H. Bennett.	C.	800		15.0													1					
Washington	W.	4,000	7,000	18.0	30.9						2	1	1		2			6	18	2		
Dr. John G. Blount.	C.	3,000		48.0								3	2		1		6			12	3	
Weldon	W.	750	1,500	32.0	16.0										2			2	2	1		
J. T. Gooch, Mayor.	C.	750		0.0																0		
Wilmington	W.	16,000	30,000	9.0	17.1						3	1	1	1	5	1		12	3			
Dr. Charles T. Harper.	C.	14,000		25.7			1	1				4	3	2	4	5	1	8	1	30	42	8
Wilson	W.	3,800	6,800	12.6	17.6						1				3			4	10	1		
Dr. W. S. Anderson.	C.	3,000		24.0				1					1		1		3			6	2	
Winston	W.	7,600	14,000	17.4	15.4						1	3	1		4			11	18	3	1	
Dr. E. A. Lockett.	C.	6,900		12.2								1	2		2		2			7	1	

N. B.—The reporters for the cities and towns printed in **Black Type** have signed this certificate: "I hereby certify that this report gives the whole number of deaths occurring within the corporate limits during the above month."

### County Superintendents of Health.

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Alamance .....	Dr. George W. Long.	Jones.....	
Alexander .....	Dr. O. L. Hollar.	Lenoir .....	Dr. C. L. Pridgen.
Alleghany .....	Dr. B. E. Reeves.	Lincoln .....	Dr. R. W. Petrie.
Anson .....	Dr. J. H. Bennett.	McDowell .....	Dr. B. L. Ashworth.
Ashe.....	Dr. Manley Blevins.	Macon .....	Dr. F. L. Siler.
Beaufort .....	Dr. John G. Blount.	Madison .....	Dr. W. J. Weaver.
Bertie .....	Dr. H. V. Dunstan.	Martin.....	Dr. W. E. Warren.
Bladen.....	Dr. L. B. Evans.	Mecklenburg.....	Dr. C. S. McLaughlin
Brunswick .....	Dr. J. Arthur Doshier.	Mitchell.....	Dr. Virgil R. Butt.
Buncombe .....	Dr. D. E. Sevier.	Montgomery .....	Dr. J. B. Shamburger.
Burke.....	Dr. J. L. Laxton.	Moore.....	Dr. Gilbert McLeod
Cabarrus.....	Dr. R. S. Young.	Nash .....	Dr. J. P. Battle.
Caldwell .....	Dr. C. L. Wilson.	New Hanover .....	Dr. W. D. McMillan.
Camden.....	Dr. C. G. Ferebee.	Northampton.....	Dr. H. W. Lewis.
Carteret .....	Dr. F. M. Clarke.	Onslow.....	Dr. Cyrus Thompson.
Caswell .....	Dr. S. A. Malloy.	Orange.....	Dr. C. D. Jones.
Catawba .....	Dr. Geo. H. West.	Pamlico.....	Dr. H. P. Underhill.
Chatham.....	Dr. J. H. Taylor.	Pasquotank .....	Dr. J. B. Griggs.
Cherokee.....	Dr. J. A. Abernathy.	Pender.....	Dr. Robt. H. Bradford.
Chowan.....	Dr. T. J. Hoskins.	Perquimans .....	Dr. C. C. Winslow.
Clay .....	Dr. J. M. Sullivan.	Person.....	Dr. J. A. Wise.
Cleveland .....	Dr. B. H. Palmer.	Pitt.....	Dr. Joseph E. Nobles.
Columbus.....	Dr. H. B. Maxwell.	Polk.....	Dr. C. J. Kenworthy.
Craven.....	Dr. Joseph F. Rhem.	Randolph .....	Dr. A. M. Bulla.
Cumberland.....	Dr. A. S. Rose.	Richmond.....	Dr. L. D. McPhail.
Currituck .....	Dr. H. M. Shaw.	Robeson .....	Dr. H. T. Pope.
Dare .....	Dr. W. B. Fearing.	Rockingham .....	Dr. Sam Ellington.
Davidson.....	Dr. Joel Hill.	Rowan.....	Dr. I. H. Foust.
Davie .....	Dr. M. D. Kimbrough.	Rutherford.....	Dr. E. B. Harris.
Duplin .....	Dr. A. J. Jones.	Sampson .....	Dr. J. O. Matthews.
Durham .....	Dr. T. A. Mann.	Scotland .....	Dr. A. W. Hamer.
Edgecombe .....	Dr. S. N. Harrell.	Stanly.....	Dr. J. N. Anderson.
Forsyth.....	Dr. S. F. Pfohl.	Stokes .....	
Franklin .....	Dr. R. F. Yarborough.	Surry .....	Dr. John R. Woltz.
Gaston.....	Dr. L. N. Glenn.	Swain.....	Dr. R. L. Davis.
Gates.....	Dr. W. O. P. Lee.	Transylvania .....	Dr. C. W. Hunt.
Graham .....	Dr. M. T. Maxwell.	Tyrrell.....	
Granville .....	Dr. S. D. Booth.	Union .....	Dr. Henry D. Stewart.
Greene.....	Dr. W. B. Murphy.	Vance.....	Dr. John Hill Tucker.
Guilford.....	Dr. Edmund Harrison.	Wake.....	Dr. J. W. McGee, Jr.
Halifax.....	Dr. I. E. Green.	Warren.....	Dr. P. J. Macon.
Harnett.....	Dr. J. W. Halford.	Washington .....	Dr. W. H. Ward.
Haywood .....	Dr. J. R. McCracken	Watauga.....	Dr. H. McD. Little.
Henderson .....	Dr. J. G. Waldrop.	Wayne.....	Dr. J. B. Outlaw.
Hertford .....	Dr. C. F. Griffin.	Wilkes.....	Dr. John Q. Myers.
Hyde .....	Dr. R. E. Windley.	Wilson.....	Dr. W. S. Anderson.
Iredell .....	Dr. M. R. Adams.	Yadkin .....	Dr. M. A. Royall.
Jackson.....	Dr. William Self.	Yancey .....	Dr. J. B. Gibbs.
Johnston .....	Dr. Thel Hooks.		













